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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1042 O.G. 45 on May 15, 1984.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced in the *Official Gazette* at 1039 O.G. 142 on Feb. 21, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Apr. 13, 1984. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,298,037, Re. S.N. 548,311, Filed Nov. 3, 1983, Cl. 141/1, METHOD OF SHIPPING AND USING SEMICONDUCTOR LIQUID SOURCE MATERIALS, John C. Schumacher, et al., Owner of Record: *Inventor,* Attorney or Agent: Louis J. Knobbe, et al., Ex. Gp.: 243

4,310,903, Re. S.N. 569,880, Filed Jan. 11, 1984, Cl. 367/102, METHOD OF AN APPARATUS FOR PROVIDING INFORMATION AS TO THE EXISTENCE OR POSITION OF OBJECTS, Leslie Kay, Owner of Record: *Inventor,* Attorney or Agent: George H. Spencer, et al., Ex. Gp.: 222

4,328,690, Re. S.N. 606,689, Filed May 3, 1984, Cl. 70/369, REMOVABLE CORE CYLINDER LOCK, Roy N. Oliver, Owner of Record: *Medeco Security Locks, Inc., Salem, Va.,* Attorney or Agent: Eugene L. Bernard, et al., Ex. Gp.: 351

4,387,599, Re. S.N. 529,224, Filed Aug. 29, 1983, Cl. 73/642, MULTIPLE FIELD ACOUSTIC FOCUSSER, Arthur Samodovitz, Owner of Record: *Inventor,* Attorney or Agent: None, Ex. Gp.: 244

4,392,778, Re. S.N. 579,468, Filed Feb. 13, 1984, Cl. 415/139, DOUBLE FLOW REHEAT DIAPHRAGM, John M. Hess, Owner of Record: *General Electric Co., Schenectady, N.Y.,* Attorney or Agent: John F. Ahern, et al., Ex. Gp.: 243

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,340,052, Reexam. No. 90/000,580, Requested: June 25, 1984, Cl. 604/317, CONNECTION SITE PROTECTOR, T. Michael Dennehey, et al., Owner of Record: *Baxter Travenol Laboratories, Inc., Deerfield, Ill.,* Attorney or Agent: Garrettson Ellis, Ex. Gp.: 336, Requester: Baxter Travenol Laboratories, Inc., Deerfiel d, Ill.

Current Membership of Performance Review Board

This notice announces the renewal of Richard J. Wieland's appointment for an additional term to expire July 12, 1987, and names a new contact person, Ms. Carolyn P. Acree, to succeed Aaron W. Deitch who has retired.

The current membership of the Board is as follows:

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Samuel S. Matthews, Member, Director,
Examining Group 250,
U.S. Patent and Trademark Office,
Washington, D.C. 20231.
Term—expires January 31, 1986.

Richard J. Wieland, (Outside) Member,
Assistant General Counsel for Litigation,
HQ National Aeronautics and Space Administration,
Washington, D.C. 20546.
Term—expires July 12, 1987.

Samih N. Zaharna, Member, Director, Patent Examining Group 160,
U.S. Patent and Trademark Office,
Washington, D.C. 20231.
Term—expires January 31, 1986.

Persons desiring any further information about the membership of the PRB may contact Ms. Carolyn P. Acree, Personnel Officer, U.S. Patent and Trademark Office, Washington, D.C. 20231. Telephone (703) 557-2662.

GERALD J. MOSSINGHOFF,
June 25, 1984. *Commissioner of Patents and Trademarks.*

Erratum

"All reference to Patent No. 4,401,173 to Akira Komoto of Japan for 'ELECTRONIC BALANCE WITH LOAD PLACEMENT DEVIATION CORRECTION' appearing in the Official Gazette of Aug. 30, 1983 should be deleted since no patent was granted."

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before Aug. 27, 1984.

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June 28, 1984. *Director, Office of Enrollment and Discipline.*

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U.S. Department of Commerce.

DEPARTMENT OF AGRICULTURE

SN-288,259 (4,446,648). BAIT POST.

SN 6-366,754 (4,446,743). METHOD AND APPARATUS FOR EDGEWISE COMPRESSION TESTING OF FLAT SHEETS.

SN 6-445,112. BAGWORM MOTH ATTRACTANT AND PLANT PROTECTANT.

SN 6-456,954 (4,447,456). STRAIN OF CORYNEBACTERIUM FASCIANS AND USE THEREOF IN CITRUS PRODUCTS.

SN 6-491,151 (4,445,902). VAPOR PROCESS FOR MINERAL DYEING CELLULOSIC FABRICS.

SN 6-527,894 (4,443,222). ZINC PYRITHIONE PROCESS TO IMPART ANTIMICROBIAL PROPERTIES TO TEXTILES.

SN 6-593,058. VISUAL-OLFACTORY HABITAT MIMIC FOR ASSESSMENT OF FRUIT FLY RESPONSE TO BEHAVIOR-MODIFYING CHEMICALS.

SN 6-606,069. POSTHARVEST BIOLOGICAL CONTROL OF STONE FRUIT BROWN ROT BY BACILLUS SUBTILIS.

DEPARTMENT OF COMMERCE

SN 6-300,830 (4,445,389). LONG WAVELENGTH ACOUSTIC FLOWMETER.

SN 6-348,576 (4,444,501). STABILIZATION MECHANISM FOR OPTICAL INTERFEROMETER.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6-227,166 (4,447,537). TICK CELL LINES.

SN 6-267,538 (4,443,431). NEISSERIA GONORRHOEAE VACCINE.

SN 6-304,571 (4,442,205). SIMIAN VIRUS RECOMBINANT THAT DIRECTS THE SYNTHESIS OF HEPATITIS B SURFACE ANTIGEN.

SN 6-314,477 (4,446,234). VITRO CELLULAR INTERACTION WITH AMNION MEMBRANE SUBSTRATE.

SN 6-423,241 (4,446,315). ADENOSINE 5'-TRIPHOSPHATE-4-CARBOXAMIDE-RIBOFURANOSYLTHIAZOLE.

SN 6-444,438. INTERCALATING AGENTS SPECITYING NUCLEOTIDES.

SN 6-582,759. BIOCOMPATIBLE CEMENTITIOUS COMPOSITIONS.

SN 6-587,682. MONOLITHIC INTEGRATED FLOW CIRCUIT.

SN 6-596,636. METHOD FOR OBTAINING PERIPLASMIC PROTEINS FROM BACTERIAL CELLS.

SN 6-598,602. PIPLINED IMAGE PROCESSING ENGINE.

SN 6-600,859. ACOUSTIC THAWING OF FROZEN FOOD.

SN 6-603,839. ADMINISTRATION OF SEX HORMONES IN THE FORM OF HYDROPHILIC CYCLODEXTRIN DERIVATIVES.

SN 6-611,752. UTILIZING A HALOHYDRO-CARBON CONTAINING DISSOLVED WATER TO INACTIVATE A LIPID VIRUS.

DEPARTMENT OF THE AIR FORCE

SN 6-550,286. RADIATION UPSET THRESHOLD DETECTOR APPARATUS.

SN 6-559,612. LOW TEMPERATURE RATE CONTROLLER.

SN 6-566,130. QUARTZ GROWTH ON X-SEEDS.

SN 6-574,434. NARROW DEVIATION VOLTAGE CONTROLLED CRYSTAL OSCILLATOR.

SN 6-580,979. TOTAL TEMPERATURE PROBE BUFFER AMPLIFIER.

SN 6-582,496. ACCOMMODATIVE AMPLITUDE AND SPEED MEASURING INSTRUMENT.

SN 6-586,955. HIGH POWER HIGH VOLTAGE LINEAR AMPLIFIER APPARATUS.

DEPARTMENT OF THE ARMY

SN 6-588,488. A VOLTMETER FOR REMOTELY SENSING HIGH VOLTAGES.

SN 6-597,326. RESONATOR INSENSITIVE TO PARAXIAL ACCELERATIONS.

SN 6-603,253. METHOD OF MINIMIZING THE AGING RATE OF AN OSCILLATOR.

DEPARTMENT OF THE INTERIOR

SN 6-340,925 (4,445,931). PRODUCTION OF METAL POWDER.

SN 6-435,534 (4,442,072). SELECTIVE RECOVERY OF BASE METALS AND PRECIOUS METALS FROM ORES.

PATENT NOTICES

Certificates of Correction for the Week of July 24, 1984

4,047,797	4,413,905	4,424,015	4,432,090
4,116,644	4,414,004	4,424,347	4,432,434
4,191,106	4,414,291	4,424,584	4,434,012
4,216,206	4,414,665	4,425,474	4,434,076
4,251,613	4,415,219	4,425,737	4,434,863
4,325,863	4,415,326	4,425,780	4,435,110
4,336,441	4,416,167	4,426,216	4,435,644
4,358,869	4,416,275	4,426,340	4,435,677
4,369,632	4,416,545	4,426,456	4,435,796
4,372,808	4,416,903	4,426,639	4,436,162
4,376,323	4,417,078	4,426,734	4,436,290
4,378,135	4,417,805	4,426,782	4,436,391
4,389,922	4,417,964	4,428,485	4,436,584
4,393,939	4,418,850	4,428,602	4,436,646
4,395,594	4,419,466	4,428,644	4,437,950
4,399,899	4,419,596	4,429,019	4,439,245
4,402,026	4,419,864	4,429,222	4,439,358
4,407,117	4,419,919	4,429,360	4,440,218
4,408,731	4,420,077	4,429,576	4,440,351
4,409,130	4,420,413	4,429,966	4,441,075
4,409,220	4,420,829	4,430,097	4,442,764
4,410,017	4,421,403	4,430,551	4,443,870
4,410,818	4,421,846	4,430,606	4,447,350
4,411,107	4,422,223	4,430,935	4,447,872
4,411,177	4,422,396	4,431,129	4,448,506
4,411,618	4,422,574	4,431,322	4,452,758
4,412,254	4,423,445	4,431,549	
4,413,074	4,423,629	4,431,895	

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Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

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State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
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Arizona	Tempe: Science Library, Arizona State University	(602) 965-7140
California	Los Angeles Public L ibrary	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
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Colorado	Denver Public Library	(303) 571-2122
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Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6670
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
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	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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	Milwaukee Public Library	(414) 278-3043

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF June 23, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	4-21-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	9-29-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	6-24-83
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	4-21-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—B. R. GRAY, Director	6-30-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	8-25-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	9-24-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	10-29-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	4-29-81
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	3-29-82
DESIGN, GROUP 290—K. L. CAGE, Director	3-12-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—(Vacant)	9-14-82
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	6-10-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	6-08-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	5-14-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-29-81

Expiration of patents: The patents within the range of numbers indicated below expire during June 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,323,134 to 3,328,805, inclusive

Plant Patents . . . . . Numbers 2,766 to 2,749 inclusive

REEXAMINATIONS

JULY 24, 1984

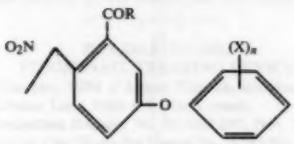
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,652,645 (223rd)
HALOPHENOXY BENZOIC ACID HERBICIDES
Robert J. Theissen, Westfield, N.J., assignor to Rhone-Poulenc Agrochemie, Lyon, France
Reexamination Request No. 90/000,280, Oct. 28, 1982.
Reexamination Certificate for Patent No. 3,652,645, issued Mar. 28, 1972, Ser. No. 819,412, Apr. 25, 1969.
Int. Cl.[3] C07C *79/46*
U.S. Cl. 560—21

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

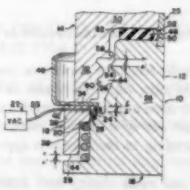
The patentability of claims **1-5** is confirmed.

1. Herbicidal compounds having the formula:



wherein X is halogen, n is 1 to 5, and R is hydroxyl, alkoxy (C_1–C_3), and phenoxy.

B1 3,936,257 (224th)
CLOSED STROKE MOLDING
Keith W. Christiansen, Fox River Grove, and Kare Andersen, Elgin, both of Ill., assignors to Chicago Rawhide Manufacturing Company, Elgin, Ill.
Reexamination Request No. 90/000,002, Jul. 1, 1981.
Reexamination Certificate for Patent No. 3,936,257, issued Feb. 3, 1976, Ser. No. 155,469, Jun. 22, 1971.
Int. Cl.[3] B29H *9/10*
U.S. Cl. 425—125



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1-3** is confirmed.

New claims **4-6** are added and determined to be patentable.

1. A mold assembly for forming an insert molded article comprised of a relatively rigid insert element and a flexible body portion, said mold assembly comprising a first, fixed mold part having surfaces thereon defining at least a portion of a molding cavity, and second and third relatively movable mold parts at least one of which includes surfaces thereon defining the remainder of said molding cavity, insert-receiving surfaces forming a part respectively of each of said second and third mold parts, means confining said second and third mold parts to a predetermined extent of movement along a given axis relative to said first part, spring means providing resistance to movement of said third part during one portion of said predetermined movement extent when said second and third mold parts move toward said fixed mold part, means for moving said second part away from said third part along said axis to open said second and third parts and to permit positioning of an insert element between said insert-receiving surfaces, and means for moving said second and third parts along said axis against the resistance of said spring while said insert is received between said second and third parts against the resistance of said spring.

4. A mold assembly for forming an insert molded article comprised of a relatively rigid insert element and a flexible body portion, said mold assembly comprising a first, fixed mold part having surfaces thereon defining at least a portion of a molding cavity, and a radially outwardly directed cylindrical locating surface, and second and third mold parts, each of which is movable relative to said first, fixed mold part, at least one of said second and third mold parts including surfaces thereon defining the remainder of said molding cavity, said molding cavity including frusto-conical surfaces meeting to define a seal band area, said first mold part further having at least one surface lying outside the cavity-defining surfaces for receiving and positioning a charge of moldable material outside said molding cavity in the open position of said mold, said first mold part also including a passage-forming surface, said second mold part further including a passage-forming surface adapted, in the closed position of said mold parts, to cooperate with said passage-forming surface on said first mold part to define therebetween an annular passage of reduced cross section adapted to form a separable trim area spaced apart from said seal band area, insert receiving surfaces forming parts respectively of each of said second and third mold parts, means confining said second and third mold parts to a predetermined extent of movement along a given axis relative to said first part, spring means providing resistance to movement of said third part during one portion of said predetermined movement extent when said second and third mold parts move toward said fixed mold part, said third part having a radially inwardly directed cylindrical locating surface spaced by a working clearance from said radially outwardly directed locating counterpart surface of said first mold part, a major portion of said radially inwardly directed cylindrical surface being exposed to and forming a portion of the interior of said molding cavity in the open position of said third part, and a minor portion of said inwardly directed cylindrical surface being exposed to and forming a portion of said interior of said molding cavity in the closed position of said third molding part, whereby at least part of said inwardly directed cylindrical surface may be protected from exposure to fluent rubber when said mold parts are closed, means for moving said second part away from said third part along said axis to open said second and third parts and to permit positioning of an insert element between said insert-receiving surfaces, and means for moving said second and third parts along said axis against the resistance of said spring while said insert is received between said second and third parts and moved against the resistance of said spring.

B1 3,972,174 (225th)

TEXTURED YARN AND FABRIC

Joe F. London, Jr., Greensboro, N.C., and Jean-Louis Lauber, Munchenstein, Switzerland, assignors to Burlington Industries, Inc., Greensboro, N.C.

Reexamination Request No. 90/000,006, Jun. 20, 1983.
Reexamination Certificate for Patent No. 3,972,174, issued Aug. 3, 1976, Ser. No. 489,724, Jul. 18, 1974.
Division of Ser. No. 421,850, Dec. 5, 1973, Pat. No. 3,911,655, which is a continuation-in-part of Ser. No. 217,059, Jan. 11, 1972, abandoned.
The portion of the term of this patent subsequent to Jul. 23, 1991, has been disclaimed.
Int. Cl.³ D02G *3/24, 3/34*
U.S. Cl. 57—208

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–6** is confirmed.

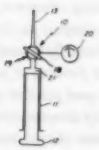
1. A textured, air jet interlaced yarn comprising a plurality of continuous synthetic thermoplastic filaments, said yarn being characterized by uniform repeating sections of about ½–1 inch in length, each said section being composed of a relatively open bulky and lofty portion of flase twisted multifilaments and a relatively short node portion where the multifilaments are closer together and are interlaced and encircled.

B1 3,999,538 (226th)

METHOD OF BLOOD VISCOSITY DETERMINATION

Van B. Philpot, Jr., P.O. Box 312, Houston, Miss. 38851

Reexamination Request No. 90/000,349, Mar. 30, 1983.
Reexamination Certificate for Patent No. 3,999,538, issued Dec. 28, 1976, Ser. No. 579,871, May 22, 1975.
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—637



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–22** are cancelled.

[**1.** A method of determining in vivo blood viscosity, said method comprising,

determining venous pressure in a body vein,

withdrawing blood from said vein at a constant pressure for a time period and determining the volume of blood withdrawn,

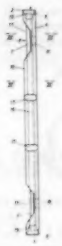
and obtaining an indication of blood viscosity of said blood when in the body.]

B1 4,186,073 (227th)

PACKAGE FOR SEWING MACHINE NEEDLES OR THE LIKE

Cesare Paganoni, Vaals, Netherlands, assignor to Nederlandse Naaldenfabriek Muva B.V., Vaals, Netherlands

Reexamination Request No. 90/000,368, Apr. 29, 1983.
Reexamination Certificate for Patent No. 4,186,073, issued Jan. 29, 1980, Ser. No. 955,459, Oct. 27, 1978.
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1978, 7808823[U]
Int. Cl.³ B65D *85/24*
U.S. Cl. 206—380



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–3, 5** and **11** are cancelled.

Claims **4, 6,** and **10** are determined to be patentable as amended:

Claims **7–9,** dependent on amended claims, are determined to be patentable.

New claims **12–19** are added and determined to be patentable.

16. A package for sewing machine needles or the like, comprising

a plate forming needle reception pockets in row-form adjacent to one another, said plate has a front side in which said needle reception pockets open along their length and a rear side, said plate being made out of a flexible material, said reception pockets corresponding in their lengths approximately to that of the needles,

said plate having end walls closing both ends of said reception pockets and being formed with catch projections projecting into the free spaces of said pockets,

said plate being formed with at least one opening which communicates with said reception pockets and extends to the rear side of said plate,

said plate has narrow longitudinal sides formed with bevelled edges,

a box having a lower part formed with triangular cross-sectionally shaped ribs defining a plurality of push-in shafts therebetween, and

said longitudinal sides with said bevelled edges are trapezoidally shaped complementary to the cross-sections of said push-in shafts, respectively.

19. A package for sewing machine needles or the like, comprising

a plate forming needle reception pockets in row-form adjacent to

one another, said needle reception pockets including free spaces and side walls, said plate has a front side in which said needle reception pockets open along their length and a rear side, said plate being made out of a flexible material, said reception pockets corresponding in their lengths approximately to that of the needles,

said plate having end walls closing both ends of said reception pockets and being formed with two catch projections projecting from said side walls into the free space of each said pocket,

said catch projections engaging needles disposed within said pockets and firmly holding said needles against movement,

said catch projections being configurated and positioned so that the catch projections associated with a pocket are fully spread when a needle is displaced outwardly,

said plate being formed with at least one opening which communicates with said reception pockets and extends to the rear side of said plate,

said last-named opening extending into the pocket side walls adjacent to said catch projections whereby a portion of the needles in the reception pockets are exposed through said opening, the exposed needle portions extending rearwardly into said opening and beyond the adjacent side walls to facilitate the pushing of said needles past said catch projections.

B1 4,282,891 (228th)

FINGERNAIL TREATING DEVICE

Antoine Duceppe, Ville d'Anjou, Canada, assignor to Revelations Antoine Ltee, Ville d'Anjou, Canada

Reexamination Request No. 90/000,297, Nov. 26, 1982.
Reexamination Certificate for Patent No. 4,282,891, issued Aug. 11, 1981, Ser. No. 912,887, Jun. 5, 1978.
Int. Cl.³ A45D *29/18*
U.S. Cl. 132—73.5

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–8** is confirmed.

New claims **9–15** are added and determined to be patentable.

1. A device for use in treating fingernails with liquid, said device comprising:

a flat-bottom container with a height, said container having a removable cover;

a liquid, disposed in said container, for treating said fingernails;

a sponge pad fitted into said container with a friction fit, said sponge pad comprising a means for preventing sloshing of said liquid in said container by virture of covering the entire diameter of said container; and

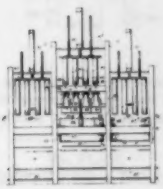
means, in said sponge pad, for snugly receiving at least said fingernail to be treated, said receiving means extending only partially into said sponge pad.

B1 4,300,325 (229th)

HOLDER ASSEMBLY FOR CASE PACKING MACHINE

Barry Campbell, Spokane, Wash., assignor to R. A. Pearson Company, Spokane, Wash.

Reexamination Request No. 90/000,418, Jul. 11, 1983.
Reexamination Certificate for Patent No. 4,300,325, issued Nov. 17, 1981, Ser. No. 88,052, Oct. 24, 1979.
Continuation-in-part of Ser. No. 955,350, Oct. 27, 1978, Pat. No. 4,259,826.
Int. Cl.³ B65B *39/08, 35/56, 5/08*
U.S. Cl. 53—143



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **12**, and **15** are determined to be patentable as amended:

Claims **2–11**, **13**, **14**, and **16–19**, dependent on amended claims, are determined to be patentable.

1. In a case packing machine for moving successive groups of containers lengthwise from a first station to a spaced second station and subsequently to a case packing station along a case packing framework, a holder assembly for releasably receiving and supporting a group of containers in a defined rectangular cluster at the second station, comprising:

a hollow box frame *movably mounted* on the case packing framework at the second station and having opposed open ends *adapted to alternately face upwardly and downwardly, said box frame permitting passage of a group of containers through either of its open ends while the containers are moved vertically into or out from the box frame in a single direction or in opposite directions relative to the box frame;*

fixed guide means arranged within the box frame perpendicular to its open ends for slidably engaging the side surfaces of [a plurality of] *individual* containers passing as a group [in reversible directions alternatively] through [either of] its open ends;

and spring biased guide means movably mounted within the box frame and spaced from the fixed guide means [to urge] *for urging* the [received] containers individually against the fixed guide means *while passing through the open ends of the box frame* and [to] *for* frictionally [engage] *engaging* the containers in a defined rectangular cluster *while* supported within the box frame.

REISSUES

JULY 24, 1984

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

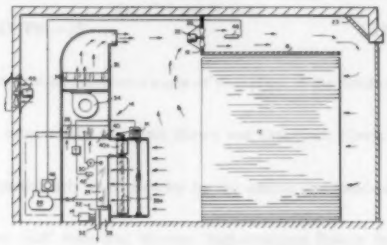
Re. 31,633
LUMBER CONDITIONING KILN

Donald C. Lewis, P.O. Box 1107, Bangor, Me. 04401

Original No. 4,250,629, dated Feb. 17, 1981, Ser. No. 13,059, Feb. 21, 1979. Application for reissue Nov. 22, 1982, Ser. No. 443,539

Int. Cl.³ F26B *3/06*

U.S. Cl. 34—13.8 **21 Claims**



1. In a kiln for drying lumber, means defining an enclosed chamber for receiving a stack of lumber with a space above and at the ends of the stack, dehumidifying means in the chamber including a condenser, an evaporator and a compressor, means defining an enclosure in the chamber within which the condenser and evaporator are contained, said enclosure being provided with intake and outlet openings through which moist air from the stack enters the enclosure and dehumidified air leaves the enclosure, said evaporator preceding the condenser in the flow path of the air passing through the enclosure, said condenser being so positioned in the enclosure that all of the air entering the enclosure must pass through the condenser, means situated in the enclosure beyond the condenser in the direction of flow for inducing flow through the enclosure, damper means situated in the enclosure preceding the evaporator, the position of which may be controlled to control the flow of air entering the enclosure through the evaporator to maintain the temperature of the evaporator at a predetermined level and, hence, the load on the compressor and means for automatically changing the position of the damper means in response to temperature sensing means positioned in the path of the air leaving the evaporator.

Re. 31,634
ALTERNATELY-OPERABLE TWO-PUSHBUTTON SWITCH

Thomas E. Norby, Raleigh, N.C., assignor to Eaton Corporation, Cleveland, Ohio

Original No. 4,166,935, dated Sep. 4, 1979, Ser. No. 945,012, Sep. 22, 1978. Application for reissue Jul. 22, 1981, Ser. No. 285,704

Int. Cl.³ H01H *13/22, 21/40, 3/12*

U.S. Cl. 200—72 R **14 Claims**

1. A two-pushbutton switch comprising:

an insulating housing having an opening therein for operating means including guiding walls below said opening;

movable and stationary contacts in said housing;

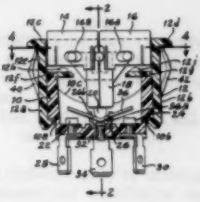
and contact operating means comprising:

a contact actuator pivotally mounted in said housing and being operable to close and open said contacts;

and operating means comprising:

a pair of pushbuttons filling said opening;

means coupling said pushbuttons to said contact actuator at points spaced on opposite sides of its pivot so that said contact actuator may be pivoted in one or the other direction by depressing the respective pushbutton while causing the other pushbutton to correspondingly rise up;



and inter-guiding means on said pushbuttons for guiding one another in their vertical reciprocal motions while also being guided by said walls of said housing

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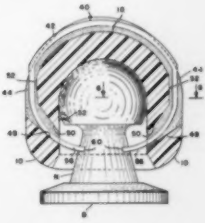
Re. 31,635
SOCKET ASSEMBLY FOR A BALL AND SOCKET COUPLING

Lawther O. Smith, Doylestown, Pa.; Timothy L. Howard, Beach Haven, N.J., and Kalman Broitman, Dresher, Pa., assignors to Gas Spring Corporation, Colmar, Pa.

Original No. 4,236,845, dated Dec. 2, 1980, Ser. No. 49,316, Jun. 18, 1979. Continuation of Ser. No. 953,763, Oct. 23, 1978, abandoned. Application for reissue Jun. 19, 1981, Ser. No. 275,445

Int. Cl.³ F16C *11/00;* **F16D** *1/12*

U.S. Cl. 403—144 **8 Claims**



1. A socket assembly for a ball and socket coupling comprising a socket body having a ball-receiving socket which includes a cylindrical portion having a central axis, a pair of slots which extend through the socket body and open into the cylindrical portion of the socket at locations diametrically opposite each other and outwardly from the seated position of a ball received in the socket, each slot having a flat surface which generally faces the seated position of the ball and converges inwardly toward the axis of the cylindrical portion of the socket and thus lies obliquely to said axis, and a generally C-shaped spring clip received on the socket body, the clip having opposed end portions which extend through the slots in the socket body and part way into the socket far enough to engage *the neck of* a ball received therein and prevent [it] *the ball* from being pulled out of the socket and which lie generally obliquely to the axis of the socket, *the opposed end portions of said spring clip being spaced closer together when there is no ball within the socket than they are when there is a ball within the socket and said end portions are in engagement with said neck, whereby the end portions of said spring clip are expanded when there is a ball within the socket a distance such that both end portion remain in engagement with said neck during tilting movement of said neck and so as to be free-floating with respect to the surface of said socket body when there is no pull out load on said ball.*

PLANT PATENTS

GRANTED JULY 24, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,261

ROSE PLANT '80-20545 JACIF'

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Nov. 19, 1982, Ser. No. 443,022

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—25 1 Claim

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of salmon pink buds and blooms, high-centered flower form, similar to variety Mercedes, resistance to rose powdery mildew, straight stems and lack of fragrance.

5,262

STRAWBERRY PLANT 'CHANDLER'

Victor Voth, Santa Ana, and Royce S. Bringhurst, Davis, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Dec. 23, 1982, Ser. No. 452,699

Int. Cl.[3] A01H *5/03*

U.S. Cl. Plt.—48 1 Claim

1. The new and distinct variety of strawberry plant herein described and illustrated and identified by the characteristics enumerated above.

5,263

STRAWBERRY PLANT 'PARKER'

Victor Voth, Santa Ana, and Royce S. Bringhurst, Davis, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Dec. 23, 1982, Ser. No. 452,697

Int. Cl.[3] A01H *5/03*

U.S. Cl. Plt.—48 1 Claim

1. The new and distinct variety of strawberry plant herein described and illustrated and identified by the characteristics enumerated above.

PATENTS

GRANTED JUL. 24, 1984

ERRATA

For CLASS	See PATENT NO.
446–128	4,461,116
446–473	4,461,117
128–681	4,461,266
346–211	4,461,494
346–211	4,461,495
346–210	4,461,496
264–176	4,461,734
546–075	4,461,895
546–165	4,461,896

PATENTS

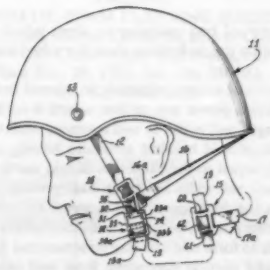
GRANTED JULY 24, 1984

GENERAL AND MECHANICAL

4,461,043
BATTING ACCESSORY
Philip R. Lomedico, Bardonia, N.Y., assignor to RI Consultants, Inc., Harrison, N.Y., a part interest
Filed Jul. 12, 1982, Ser. No. 397,604
Int. Cl.³ A41D *13/00*
U.S. Cl. 2—21 **9 Claims**

1. A batting pad comprising an elongated member made of a cushioning material and having a ring portion adapted to fit over a batter's thumb and a flap portion extending therefrom, said flap portion having a curvature similar to the natural curve of a batter's hand so as to rest upon the cradle area between the batter's thumb and index finger.

4,461,044
BICYCLE HELMET RETENTION SYSTEM WITH QUICK DISCONNECT
Donald R. Reiterman, Glendora, and James G. Sundahl, Irvine, both of Calif., assignors to Bell Helmets Inc., Norwalk, Calif.
Filed Jun. 4, 1982, Ser. No. 385,020
Int. Cl.³ A42C *5/04*
U.S. Cl. 2—421 **10 Claims**



1. For use in a helmet retention system for a forwardly facing helmet, the system including

(a) left and right retention strap sections attachable to the helmet,

(b) and rear strap sections attachable to the helmet, the improvement comprising

(c) a clip having first, second and third attachment structures which are integrally interconnected,

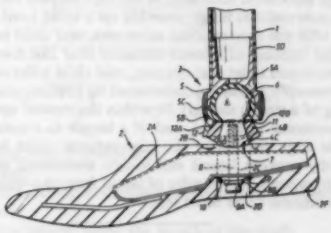
(d) the first attachment structure including generally forwardly extending parallel slots in which one of said left and right retention strap sections is threadable for strap length adjustment,

(e) the second attachment structure including a generally upwardly extending additional slot to receive one of said rear strap sections, and

(f) the third attachment structure including a hook below the level of said first attachment structure to removably support a connector operatively connected to the other of said left and right retention strap sections, and a cantilevered retainer adapted to be deflected when said connection is applied to the hook or removed therefrom, and which otherwise retains the connector against removal from the hook,

(g) the clip having a vertically planar body having spaced vertically extending legs, the retainer located to be deflected into the space between the legs.

4,461,045
ARTIFICIAL LEG
John J. Shorter, East Oakley, and Michael W. Brewer, Basingstoke, both of England, assignors to Chas. A. Blatchford & Sons Ltd., Hampshire, England
Filed Nov. 30, 1982, Ser. No. 445,747
Claims priority, application United Kingdom, Dec. 10, 1981, 8137207
Int. Cl.³ A61F *1/04*
U.S. Cl. 3—32 **13 Claims**



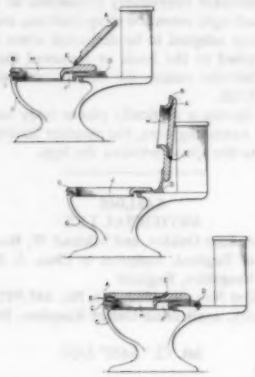
1. An artificial leg comprising a shin member and a foot and, connecting the shin member and the foot, a ball and socket joint which includes a socket and a ball member, the ball member having a ball portion within the socket and a coupling shank, wherein (i) the socket includes an extension arranged to co-operate with an elastic buffer mounted between the coupling shank and the extension so as to provide resistance to dorsi-flexion of the foot relative to the shin member; (ii) the extension comprises a skirt shaped to engage a portion of the outer surface of the buffer; and (iii) the skirt subtends an angle of between 90° and 270° at a longitudinal axis of the coupling shank.

4,461,046
FAMILY TOILET SEAT
Harold D. Adams, 1111 Cloverdale, Greenville, Miss. 38701
Filed Jan. 3, 1983, Ser. No. 436,275
Int. Cl.³ A47K *13/00*
U.S. Cl. 4—235 **7 Claims**

1. A multiple toilet seat assembly for use with a conventional toilet bowl unit comprising a cover, as adult seat having a central opening therein and a downwardly extending contoured lip portion closely surrounding the toilet bowl opening, a child seat intermediate the cover and said adult seat, said child seat having therein a central opening of a diameter substantially less than the diameter of the central opening of said

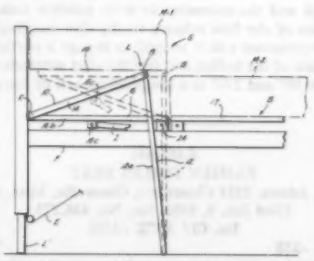
adult seat, said child seat having a downwardly extending contoured lip portion of a length at least equal to the extension of the lip portion of the adult seat and of a size to snuggly fit within the contoured lip portion of the adult seat to thereby prevent lateral side-to-side movement therebwetween and to prevent the transfer of liquid from the child seat to the adult seat.

5. A multiple toilet seat conversion assembly for converting a conventional toilet bowl seat assembly to a multiple toilet bowl seat assembly comprising a child seat and a cover hinged thereto at the rear most portion thereof, said child seat having



means associated therewith at the rear thereof for attachment to a conventional hinge assembly on a toilet bowl in conjunction with the conventional toilet seat, said child seat having a central opening of a lesser diameter than the diameter of the conventional toilet seat opening, said child toilet seat having a downwardly extending countoured lip portion, said lip portion being of a size to snuggly fit within the central opening of the conventional toilet seat, and of a length to extend below the inside edge portion of the conventional toilet bowl seat to thereby prevent lateral side-to-side movement therebetween and to prevent the transfer of liquid from the child seat to the conventional toilet bowl seat.

4,461,047
LEDGE BED OVERLAY
William L. Lindley, P.O. Box 1292, Conroe, Tex. 77301
Filed Jun. 23, 1982, Ser. No. 391,126
Int. Cl.³ A61G 7/02
U.S. Cl. 5—90 **9 Claims**



1. A ledge bed overlay apparatus adapted to be positioned with a conventional patient care bed having a vertically movable bed frame, an upper torso mattress support section which is pivotally mounted on the bed frame for movement from a horizontal position to an inclined position to elevate the head of a patient relative to the rest of the patient's body, said overlay apparatus including:

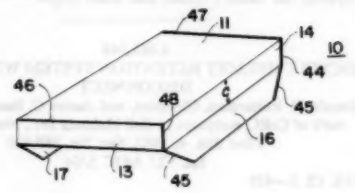
a mattress support member;

means with said mattress support member for pivotally mounting an upper end of said mattress support member with the upper torso mattress support section of the patient care bed;

a stiff leg assembly for pivotal attachment to said mattress support member; and,

pivot means mounted with the lower end of said mattress support member pivotally engaging said stiff leg assembly to a lower end of said mattress support member for swinging from a retracted position to an operative substantially vertical position with its lower end engaged with the floor, whereby lowering of the bed frame with said stiff leg assembly in the operative position creates a ledge for supporting the upper torso portion of the patient's body at an elevation above said horizontal position of the upper torso mattress support section.

4,461,048
UNIVERSAL BED COVERING OR BED SHEET APPARATUS
Ralph M. Allaire, Jr., 28 Caldwell Dr., Princeton, N.J. 08540
Filed May 10, 1982, Ser. No. 376,404
Int. Cl.³ A47G 9/02
U.S. Cl. 5—497 **9 Claims**



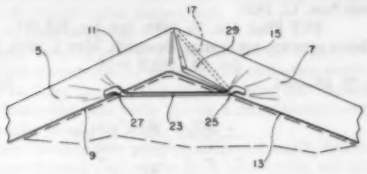
1. An improved bed covering or sheet which can be employed as both a top or bottom sheet for a bed mattress, comprising:

a fabric box-like structure having an opened bottom surface and a closed planar top surface which is substantially the same length and width as said mattress, with two opposite sidewalls of said box-like structure having a width substantially equal to the thickness of said mattress, with the other two sidewalls having a first portion of the same width as the thickness of said mattress and with the edges of said first portion secured to adjacent edges of the other sidewalls to form said box-like structure and with a further trapezoidal portion depending from said other two sidewalls which edges of said trapezoidal portions are not sewn to any other edge of said sheet with the base of said trapezoidal portion integral with the outer edge of said associated first portion to enable a user to cover said mattress in a first mode where said structure is employed as bottom sheet and used in a second mode where said structure is drawn inside out to be employed as a top sheet and when employed as a top sheet said sheet can be folded back at the top edge to cover the top of a blanket to provide angular side panels on either side of said mattress due to said trapezoidal portions.

4,461,049
FITTED SHEET WITH ELASTIC RESTRAINTS

Philip G. Hammond, Outagamie County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 12, 1982, Ser. No. 367,206
Int. Cl.[3] A47G 9/04
U.S. Cl. 5—498 5 Claims



1. An improved fitted mattress covering (1) fabricated from flexible material having a rectangular central portion (3); a pair of opposed side panels (5), each having interior and exterior edges (11 and 9, respectively); at least one end panel (7) having interior and exterior edges (15 and 13, respectively), the side panels and end panel being of substantially the same width, each of the side panels being folded over along the interior edge (11) thereof in facing contact with a common means (19) for attaching each side panel to at least one end panel along a line extending diagonally from the exterior edge of the side panel where it meets the exterior edge (13) of the end panel (7) to a point on the interior edge (11) of the side panel coincident with the interior edge (15) of the end panel (7); wherein the improvement comprises:

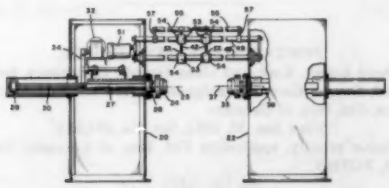
at least one pair of elastic bands (23) having been attached in a stretched condition and in cooperation with the attached end panel, each band (23) having a first end (27) located on a respective side panel (5) adjacent the exterior edge (9) thereof and coincident with the attachment line (17), each band having a second end (25) located adjacent the exterior edge (9) of the respective side panel (5) between the interior edge (15) of the end panel (7) and the mid-point of the side panel (5); and

fastening means for fastening each band (23) to a respective side panel (5), so that the elastic bands (23) are adapted when the fitted covering is in the operative position to pass diagonally under respective corners of the mattress to aid in maintaining proper fit.

4,461,050
AUTOMATIC BEAM CLEANING MACHINE

James L. Gantz, and Marcus C. Martin, both of Columbia, S.C., assignors to Allied Corporation, Morristown, N.J.

Filed Dec. 28, 1981, Ser. No. 334,661
Int. Cl.[3] B08B 1/00
U.S. Cl. 15—3 11 Claims



1. An apparatus for cleaning a spool having a cylinder and at least one circumferential ridge having a radially extending surface comprising:

a support means;

a first chuck rotatably mounted on the support means, the first chuck having a first axis of rotation;

a second chuck rotatably mounted on a support means, the second chuck having a second axis of rotation coinciding with the first axis of rotation, and the second chuck facing the first chuck;

at least one cleaning arm, the cleaning arm having a supported end, and a free end, and at least one cleaning means attaching surface between the supported end and the free end adjacent to the free end;

a cleaning means attached to said attaching surface, said cleaning means comprising pad means having a surface substantially perpendicular to said first axis of rotation;

a cleaning arm support mounted on the support means at a location so that the free end of the cleaning arm is located at the distance from the axis of rotation of at least the radius of a mounted cylinder;

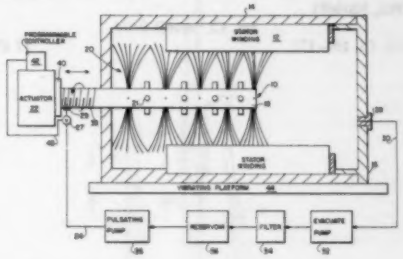
a means to move the free end in a radial direction; and

a means to move the free end parallel to the first axis of rotation to contact the radially extending surface.

4,461,051
APPARATUS FOR CLEANING STATOR WINDINGS

Arnold Schindel, Fairlawn, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Sep. 1, 1982, Ser. No. 413,923
Int. Cl.[3] A46B 13/04
U.S. Cl. 15—21 E 6 Claims



1. A cleaning system comprising:

a hollow shaft;

brush means mounted to the shaft for contacting an object to be cleaned;

nozzle means located along the length of the shaft;

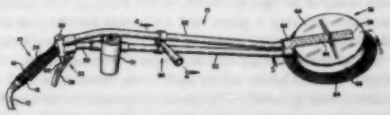
means for delivering fluid to the shaft for creating fluid jets from the nozzle means which impinge against the object to be cleaned; and

actuating means for automatically moving the shaft in a linear reciprocating motion simultaneous with the occurrence of the impinging jets, wherein the fluid delivering means includes a pump for generating pulsations in the fluid resulting in pulsating jets.

4,461,052
SCRUBBING BRUSH, RINSE AND SWEEPING EQUIPMENT

Thomas A. Mostul, 10567 SW. 63rd Dr., Portland, Oreg. 97219

Filed Sep. 27, 1982, Ser. No. 423,675
Int. Cl.[3] A46B 13/06
U.S. Cl. 15—29 10 Claims



1. A handle/valve mechanism comprised of a handle with an

end of a quick connect/disconnect hose fitting formed at the inlet end, which allows for the passage of pressurized water through a central bore in said handle to a lever operated, single spool, four way control valve formed within said handle, said valve directing flow to a pair of outlet passage orifices used individually or collectively at operator's will to perform a desired operation, one position of said valve channeling water to a first tube which contains as in-line soap dispenser for the purpose of dispensing a small amount of soap into said tube and which is discharged onto a rotating brush after driving a turbine rotatively connected through a planetary gear means to impart rotational motion to said brush during current wash operation; a second position of said valve directing the passage of water through a second tube to an orifice located in the brush body to accommodate rinsing.

4,461,053

MULTIPLE PART TOOTHBRUSH HAVING AN EXCHANGEABLE BRUSH HEAD

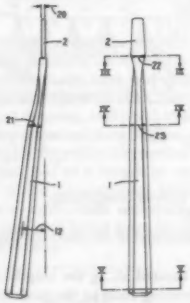
Klaus Nitzsche, Am Ludwigsplatz; Ludwig Lang, and Ortulf G. Lang, both of Rodinghweg 3, all of 61 Darmstadt, Fed. Rep. of Germany

Filed May 19, 1982, Ser. No. 379,675

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1982, 3200681

Int. Cl.³ A46B 9/04

U.S. Cl. 15—172 **11 Claims**



1. A toothbrush, comprising a handle and a brush head, said handle including an elongate stem and an elongate generally flat connecting member of substantially uniform thickness which is supported on said stem at one end thereof, which extends away from said one end of said stem at a small acute angle with respect to said stem, and which is generally wedge shaped and tapers toward its outer end, said brush head including a headpiece, means defining an elongate cavity in said headpiece which is generally wedge shaped and tapers inwardly, and a plurality of bristles which each have one end supported on and which project outwardly from said headpiece, said cavity being adapted to receive said connecting member snugly and removably therein in two different orientations which respectively correspond to first and second positions of said brush head relative to said stem and in which said bristles project in respective, approximately opposite directions relative to said stem, the outer ends of said bristles substantially defining a plane and said stem forming an angle of substantially 7° with respect to said plane when said brush head is in said first position and an angle of substantially −7° with respect to said plane when said brush head is in said second position, said generally flat connecting member and said cavity both being substantially parallel to said plane of the outer ends of said bristles.

4,461,054

CLEANING DEVICE FOR CLEANING THE INNER SURFACE OF A CONTAINER

Adam A. Oehlenschläger, Middelfart, and Baldvin Einarsson, Odense, both of Denmark, assignors to AO-Engineering A/S, Denmark

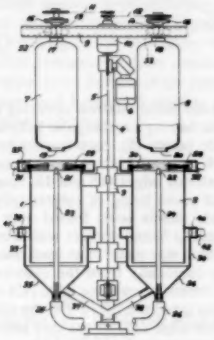
PCT No. PCT/DK81/00046, 371 Date Dec. 3, 1981, 102(e) Date Dec. 3, 1981, PCT Pub. No. WO81/03140, PCT Pub. Date Nov. 12, 1981

PCT Filed Apr. 30, 1981, Ser. No. 328,585

Claims priority, application Denmark, May 1, 1980, 1924/80

Int. Cl.³ B08B 9/08

U.S. Cl. 15—304 **16 Claims**



13. An abrasive cleaning device for cleaning and scouring the inner surface of a container, said device comprising:

(a) means for transporting a container to be cleaned, said means suspending a container by a closed end, with an open end of the container facing downwardly;

(b) a downwardly closed and upwardly open first jacket for surrounding the container to be cleaned;

(c) a first nozzle arrangement mounted within said jacket for ejecting abrasive cleaning granules;

(d) means for moving said jacket and said nozzle upwardly to enclose the container and direct the nozzle arrangement into the open end of the container;

(e) means for forcing granulated and abrasive cleaning material through said nozzle after the nozzle has entered the container, said granulated material thereby cleaning and scouring the inner surface of the container;

(f) a collar of continuous dense bristles surrounding the open end of the jacket and extending inwardly above said nozzle to cooperate with the container to close the upper opening of the first jacket and thereby prevent the escape of granulated abrasive cleaning material or dust resulting from their fragmentation.

4,461,055

PORTABLE SWEEPING DEVICE

Gerhard Zerrer, Korb, and Hans Trumpf, Leutenbach, both of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Jun. 30, 1982, Ser. No. 393,681

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1981, 3125889

Int. Cl.³ A47L 5/24

U.S. Cl. 15—344 **12 Claims**

1. A portable sweeping device which removes debris with an air-blast flow, said device comprising:

a housing having an upper end, an air inlet, and an air discharge outlet;

a handle arranged at said upper end of said housing and said device being intended to be held by the operator in one hand;

a fanwheel blower arranged in said housing and having an axis of rotation which is at least substantially vertical in the operating position of said sweeping device; and

an internal combustion engine having an air intake and being arranged in said housing in the direction of said axis of rotation of said fanwheel blower for driving the latter to generate an air flow which exits said housing through said air discharge outlet thereof; and,

said housing including:

an upper housing part to which said handle is attached and which accommodates said internal combustion engine and its auxiliary devices, said upper housing part including a cylinder-like base body having a cross section which is circular to oval in shape; and,

a lower housing part which is arranged axially below said upper housing part remote from said handle, and accommodates said fanwheel blower, with an air channel which terminates in said air discharge outlet being formed by said lower housing part, said air channel communicating with said air flow generated by said fanwheel blower; and,

said upper housing part including a domed top for accommodating a starter device arranged in the region of said domed top in the immediate vicinity of said handle and wherein exhaust gases from said internal combustion engine are discharged on the side of said device away from the side of the operator's body corresponding to the one hand in which the device is held; and, said domed top further accommodating, as one of said auxiliary devices of said internal combustion engine, an air intake filter which is mounted on said air intake and which is open to the atmosphere on that side of said device remote from said air discharge outlet.

4,461,056

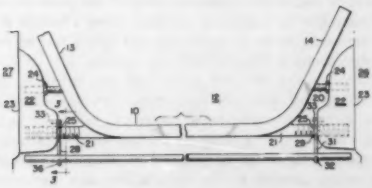
SHOWER AND DECORATIVE CURTAIN SUSPENSION FOR A BATHROOM STALL

Walter Solinski, 365 Smith Ct., Fairbanks, Ak. 99701

Filed Jan. 8, 1982, Ser. No. 337,965

Int. Cl.³ A47H *1/022*

U.S. Cl. 16—87.4 R **5 Claims**



1. A dual shower curtain support assembly comprising:

a pair of aligned rod support blocks adapted for support against opposed walls of a shower stall;

a pair of transversely spaced threaded rods extending from, and having sliding fits with, apertures in each opposed block face;

the opposed ends of said rods connecting with and supporting a curtain support rod;

means combined with said curtain support rod and threaded rods by which to hang a functional shower stall curtain and a decorative curtain;

adjusting nut means on each of said threaded rods whereby to bear against the opposed faces of the support blocks for pressuring the blocks against said opposed shower stall walls for firmly positioning said support assembly; wherein forwardly ones of said adjusting nuts each comprises a forwardly extending arm structure; means at free ends of said arms for supporting a second curtain rod; and said second rod comprising said means to hang the decorative curtain.

4,461,057

HANDLE BAR FORMED AS TELESCOPIC TUBE

Henry M. Unger, 24, Sunset Dr., Weston, Conn. 06880

Filed May 28, 1982, Ser. No. 383,378

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1981, 3122103

Int. Cl.³ B25G *1/04*

U.S. Cl. 16—114 R **4 Claims**

1. An extensible handle bar for tools, such as cleaning and painting tools, comprising

(a) an inner cylindrical walled tube and an outer cylindrically walled tube, said inner tube slidably telescoping within said outer tube;

(b) at least one aperture in a wall of said outer tube adjacent one end thereof;

(c) an insert positioned in said at least one aperture, said insert having an inner surface confronting an outer surface of said inner tube and an outer surface opposite said inner surface;

(d) resilient means for retaining said insert in said at least one aperture; and

(e) a sleeve-like internally helically threaded nut extending over an exterior surface of said outer tube and said at least one aperture and said insert positioned therein;

(f) said outer surface of said insert comprising a plurality of thread segments projecting radially beyond the exterior surface of said outer tube and mating with the internal threads of said nut;

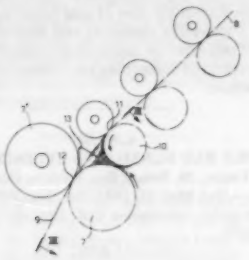
(g) at least one of said internal threads of said nut and said thread segments of said insert has a conical configuration;

(h) whereby rotation of said nut in one direction on said outer tube will cause said insert to be depressed radially and said inner surface of said insert to press against said outer surface of said inner tube to axially lock said inner and outer tubes together.

4,461,058
DRAWING FRAMES

Piero Gaudino, Cossato, Italy, assignor to Officine Gauding di P. Gaudino & C. S.a.s., Cossato, Italy

Filed May 10, 1982, Ser. No. 377,273
Claims priority, application Italy, May 20, 1981, 67679 A/81
Int. Cl.³ D01H 5/22
U.S. Cl. 19—258 1 Claim

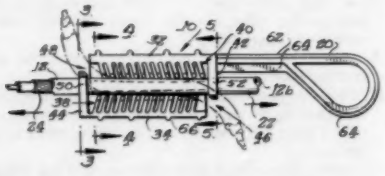


1. A drawing frame for a spinning machine having at least one drawing region for slivers for direct spinning of combed and semi-combed yarn comprising a plurality of pressure and control rollers for the sole control of said slivers and a draw-off roller mounted in said frame adjacent one of said control rollers with the periphery of said control roller being separated from the periphery of said draw-off roller by a small gap, the improvement comprising the width of said gap being between 0.1 and 8 mm, wherein the ratio of the peripheral velocity of said draw-off roller to the peripheral velocity of said adjacent control roller is between 5 and 60, and the ratio of the diameter of the draw-off roller to the diameter of said adjacent control roller is between 0.5 and 5 to provide a flow of air between said draw-off roller and said adjacent control roller to prevent the formation of fibrous windings on said control roller.

4,461,059
DROP WIRE CLAMP

George J. Bury, Lake Villa, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 26, 1982, Ser. No. 362,222
Int. Cl.³ F16G 11/02
U.S. Cl. 24—129 R 9 Claims

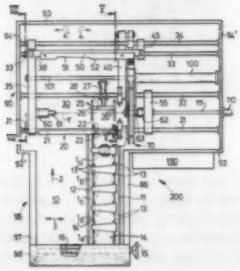


1. A unitary, integrally formed wire clamp comprising: an elongate, open-ended housing having a generally U-shaped cross-section for receiving a wire therein, restraining means integrally formed in said housing for restraining axial movement of said wire in a first axial direction while permitting axial movement of said wire in an axial direction opposite said first axial direction, and each of the axially outermost ends of said open-ended housing including means for engagement over said wire for opposing removal of said wire from said U-shaped housing in a generally upward direction, and said elongate housing including a bottom wall and a pair of substantially parallel side walls, said bottom wall and said side walls together defining a U-shaped cross-section, said bottom wall further includes an integrally formed raised rib portion substantially coaxially aligned with said means for engagement over said wire for urging said wire into retaining engagement beneath said engagement means, an uppermost surface of said rib portion being spaced apart from the lowermost extremity of said engagement means by an amount at least as great as the cross-sectional dimension of said wire to permit said wire to be received therebetween.

4,461,060
METHOD AND APPARATUS FOR REMOVING YARN REMNANTS FROM A BOBBIN

Felix Mannhart, Dietikon, Switzerland, assignor to F. Mannhart AG, Dietikon, Switzerland

Filed Nov. 17, 1981, Ser. No. 322,229
Claims priority, application Switzerland, Nov. 20, 1980, 8576/80
Int. Cl.³ B65H 73/00
U.S. Cl. 28—295 12 Claims



1. A method for automatically removing yarn remnants from a bobbin or the like, comprising the steps of

(a) disposing said bobbin along a longitudinal axis substantially coinciding with its central axis,

(b) locating a cutter and at least two strippers about said longitudinal axis and continuously rotating said cutter

(c) moving said bobbin along said longitudinal axis relative to said rotating cutter and strippers,

(d) simultaneously moving said rotating cutter and strippers in a radial direction toward said longitudinal axis,

(e) locating a template having a contour conforming to the shape of the bobbin parallel to the axis of said bobbin and movable conjointly therewith, and

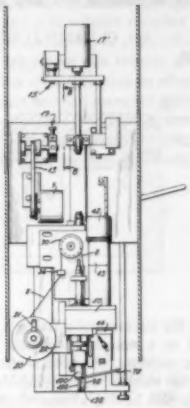
(f) controlling the radial movement of said cutter and strippers toward said bobbin in response to the axial movement of said template, whereby the inward movement of said cutter and strippers in cooperation with the axial movement of said bobbin cause removal of the yarn thereon.

3. Apparatus for removing remnants from a bobbin or the like, comprising means for mounting said bobbin for reciprocal movement along a longitudinal axis substantially coincident with its central axis, a cutter and at least two strippers, means for mounting said cutter and said strippers about the longitudinal axis, means for rotating said cutter and means for radially moving said cutter and strippers relative thereto, a template conforming to the shape of said bobbin, means for mounting said template parallel to the longitudinal axis for conjoint movement with said bobbin, and means responsive to the shape of said moving template for actuating the means for radial movement of said cutter and said strippers, whereby on movement of said bobbin in one direction toward said cutter and strippers, said cutter and strippers are moved into engagement with the yarn remnant on said bobbin and on reverse movement of said bobbin to move away from said bobbin.

4,461,061
APPARATUS FOR CONNECTING WIRE TO INSULATION DISPLACEMENT-TYPE CONTACTS

Lawrence S. Rock, Harpursville, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.

Filed Apr. 28, 1982, Ser. No. 372,670
Int. Cl.³ H05K *13/06*
U.S. Cl. 29—33 M 14 Claims



1. In an apparatus for connecting wire to circuit board-mounted, insulation displacement-type contacts, each of said contacts having fingers between which said wire is conductively gripped, said apparatus comprising supply means for supplying said wire to a pusher means for engaging and pushing a portion of said wire between said fingers to establish conductive gripping thereof by said fingers, the improvement comprising:

means for positioning one of said contacts and a pusher of an insert head opposite each other and orienting said pusher about a generally longitudinal axis of said pusher and relative to said fingers according to an orientation of said one contact upon a circuit board;

means for feeding and guiding said wire from said supply means to said pusher means, said guiding means comprising a tube through which said wire is fed adjacent a wire receiving groove in a face of said pusher;

means for extending said insert head and said pusher toward one of said contacts to an extended position and driving a first portion of said wire into said fingers by said pusher to establish said conductive gripping;

means for retracting said head and clearing said pusher from said one contact while paying out said wire from said supply means;

means for positioning another contact of said circuit board and said pusher opposite one from each other while paying out said wire from said supply between said one and another contacts and keeping said wire positioned relative to said head for said driving;

means for extending said head and said pusher toward said other contact to said extended position and during a second portion of said wire into fingers thereof by said pusher to establish said conductive gripping and an electrical connection between said one and another contacts;

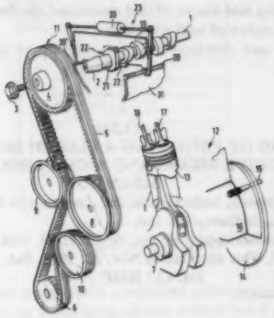
means for cutting said wire to terminate said electrical connection at said other contact and to provide a remaining supply portion of said wire not connected to said contacts, said cutting means being positioned between said pusher and said tube such that said wire is cut on an opposite side of said fingers of said other contact from said wire between said one and another contact without raising said pusher from said extended position at said other contact; and

means for automating and controlling said orienting, positioning, feeding, extending, driving, retracting, and cutting.

4,461,062
METHOD FOR ADJUSTING THE VALVE CONTROL OF A RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE, ESPECIALLY OF A DIESEL ENGINE

Harald Melzer, Neufahrn, and Joachim Hahn, Wolfratshausen, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 6, 1982, Ser. No. 406,045
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3131278
Int. Cl.³ B21K *1/20*; B23P *13/00*
U.S. Cl. 29—156.7 R 2 Claims



1. A method for the adjustment of the valve control of a reciprocating piston internal combustion engine, which includes a cam shaft driven from a crankshaft by an endless flexible transmission member, and which comprises the steps of arranging the crankshaft in a predetermined position corresponding to the upper dead-center position of a reference cylinder of the internal combustion engine, nonrotatably securing the cam shaft in a rotational position coordinated to the crankshaft rotational position, holding a drive gear, adapted to be drivingly connected with the cam shaft by frictional engagement, to be rotatable on the cam shaft during the adjustment, characterized by causing engagement of the cam shaft with a valve control adjustment device arranged transversely to the separating surfaces of the control space housing, nonrotatably holding the driving gear with respect to the cam shaft by the transmission member tensioned by a tensioning roller with a loosened threaded connection of the driving gear, and positively securing the crankshaft in the predetermined position with respect to the crankcase.

4,461,063
PREVAILING TORQUE ADJUSTING ELEMENT AND METHOD AND APPARATUS FOR THE CONSTRUCTION THEREOF

DeLane D. Patton, Worthington, Ohio, assignor to Columbus Auto Parts Company, Columbus, Ohio

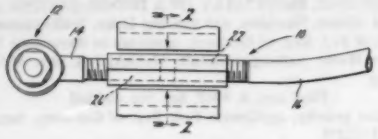
Filed Aug. 26, 1981, Ser. No. 296,260
Int. Cl.³ B23P *13/00*
U.S. Cl. 29—175 R 11 Claims

8. A method for positively and adjustably holding a turnbuckle assembly together, said turnbuckle assembly comprising an internally threaded sleeve and two elongated members each having at least one threaded end threadably insertable into opposite ends of said sleeve, comprising:

placing a first and a second die in a press, said dies each having a face, each said face having a V-notch extending across said face, the apex of each said V-notch forming a

first longitudinal axis for each said notch, each said die having a second axis normal to said face and intersecting said longitudinal notch axis;

positioning said dies wherein said faces are directed toward one another, said first longitudinal axes of said notches are



parallel to one another, and each said second normal axis of each said die is directed toward the other of said dies;

positioning said sleeve of said assembled turnbuckle between said notches of said dies; and

pressing said dies together onto said sleeve to deform said sleeve.

4,461,064

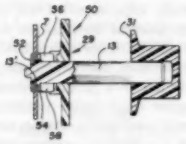
METHOD OF PROVIDING A CLUTCH BETWEEN A MOTOR DRIVE MEANS AND A CAM PROGRAMMING MEANS

Steven W. Smock, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 121,224, Feb. 13, 1980, abandoned. This application Nov. 25, 1981, Ser. No. 324,857

Int. Cl.³ B23P *19/00*

U.S. Cl. 29—434 **3 Claims**



1. A method of providing a clutch between a motor drive means and a cam programming means of a timer wherein electrical switch means are responsive to rotation of said cam programming means, said cam programming means responsive to both manual drive means and said motor drive means; the method comprising providing a rotating member with a central aperture therein; coupling said rotating member to said motor drive means; insert molding with said rotating member as a single unit a shaft extending through said central aperture and a pair of discs extending radially from said shaft, one side of each of said discs engaging opposite surfaces of said rotating member and the opposite side of one of said disc being molded with a coupling element thereon, said insert molding providing a tight manually overcomeable fit between said shaft and a wall of said central aperture, and a tight manually overcomeable fit between said rotating member and said pair of discs; assembling a coupling element of said cam programming means on said shaft in engageable relationship to said coupling element of said one disc, and coupling said pair of discs to said programming means; said pair of discs having different coefficients of friction than said rotating member whereby said motor drive means will frictionally drive said shaft and said cam programming means thereon by friction between said rotating member and said discs, and said cam programming means being manually rotatable relative to said rotating member by overcoming the friction between the discs and the rotating member.

4,461,065

TUBE COVER MOUNTING METHOD

Bodo Fütterer, Lucerne, Switzerland, assignor to Interelectric AG, Switzerland

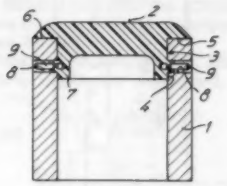
PCT No. PCT/DE80/00077, 371 Date Jan. 23, 1981, 102(e) Date Jan. 21, 1981, PCT Pub. No. WO80/02529, PCT Pub. Date Nov. 27, 1980

PCT Filed May 22, 1980, Ser. No. 230,962

Claims priority, application Fed. Rep. of Germany, May 23, 1979, 2921071

Int. Cl.³ B23P *11/02*

U.S. Cl. 29—446 **5 Claims**



1. A method for permanently fixing a molding of thermoplastic material to a non-thermoplastic tube section snugly surrounding the molding, the tube section including radially oriented bores, the method comprising the steps of providing non-thermplastic pins having a lesser diameter than the diameter of the bores, heating the pins, displacing thermoplastic material into a gap between the pins and walls of the bores by pressing the pins through the bores into the thermoplastic material to bond the pins and retain same as lost elements in the thermoplastic molding.

2. A method for permanently fixing a molding of thermoplastic material to a non-thermoplastic tube section snugly surrounding the molding, the tube section including radially oriented bores, the method comprising the steps of providing non-thermoplastic pins having a lesser diameter than the diameter of the bores, heating the pins, displacing thermoplastic material into a gap between the pins and walls of the bores by pressing the pins through the bores into the thermoplastic material, forming a recess in a circumferential surface of the pins prior to the pressing step to allow the thermoplastic material to flow into said recess during the pressing step and thereby interlock said pins in the thermoplastic material in said bores, and leaving the pins as lost elements in the thermoplastic molding.

4,461,066

METHOD OF MAKING VENTILATION APPARATUS

James R. Peterson, 8529 Hubbard, Westland, Mich. 48185

Division of Ser. No. 176,608, Aug. 8, 1980, which is a continuation of Ser. No. 638,030, Dec. 5, 1975. This application Nov. 26, 1982, Ser. No. 444,650

Int. Cl.³ B21D *39/00*; **B23P** *11/00*

U.S. Cl. 29—455 R **6 Claims**

1. A method of fabricating a roof ventilation device, comprising the steps of:

(a) forming a tubular member;

(b) forming a generally tubular cap to be sleeved over the top of said tubular member, said cap having a smaller diameter portion adjacent a closed end of said cap and a larger diameter portion spaced from said closed end of said cap;

(c) forming at least one ventilation aperture in said tubular member adjacent said top thereof;

(d) sleeving said cap over said top of said tubular member above said aperture such that said smaller diameter portion of said cap and said tubular member are in face-to-face, overlapping relationship to each other; and

(e) simultaneously deforming said tubular member and said overlapping smaller diameter portion of said cap radially inwardly along said smaller diameter portion, the deformation being performed around the entire circumference of said tubular member and said cap to produce a tight interference fit between said tubular member and said cap.

4,461,067

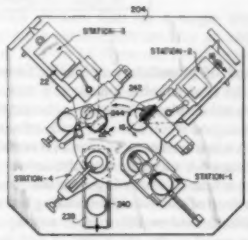
APPARATUS FOR MAKING LOCKING SEALING RINGS

Otto Weissing, Paoli, Pa., and Don C. Hill, St. Louis, Mo., assignors to McQuay-Norris, Inc., St. Louis, Mo.

Filed Mar. 29, 1982, Ser. No. 363,126

Int. Cl.³ B23P *23/00*

U.S. Cl. 29—564.1 **11 Claims**



1. Apparatus for making positive locking circular split sealing rings having interengageable hooking notches in the ends thereof, comprising a hopper for containing a plurality of roughsized and pre-gapped ring blanks, an apertured ring blank carrier plate, means for feeding rough blanks sequentially and separately from the hopper and means for inserting the so-fed ring blanks into spaced sequential apertures in said carrier plate while positively frictionally positioning and engaging a said ring blank in a said aperture, means for clamping the so-positioned and contained ring blanks to the carrier plate within said apertures, plunge cutting means adapted, in a single plunge movement, to cut a hook notch in the upper side of a first end of the ring blank, said plunge cutting means including ganged and unitized plural cutter wheels simultaneously operable to trim a first free terminal end of the ring a predetermined amount, similar plunge cutting means adapted, in a single movement, to hook notch the lower side of a second said free terminal end of the ring utilizing a similar ganged and unitized plural cutter, and simultaneously trim the said second free terminal end of the ring a predetermined amount, means operable for automatically coupling the hook notches in the opposite ring ends, and means to thereafter eject the finished and free end hooked rings into a discharge chute.

4,461,068

AUTOMATIC SLOTTING APPARATUS WITH TOOL CHANGING DEVICE

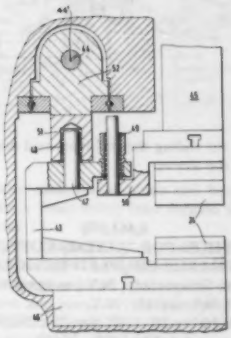
Franz Schneider, Göppingen; Ewald Bergmann, Rechberghausen; Otto Kurz, Hattenhofen, and Hans-Martin Dommer, Göppingen, all of Fed. Rep. of Germany, assignors to L. Schuler GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 75,485, Sep. 14, 1979, abandoned. This application Jul. 12, 1982, Ser. No. 397,032

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1978, 2839992

Int. Cl.³ B23Q *3/155*

U.S. Cl. 29—568 **5 Claims**



1. Automatic numerically controlled slotting machine apparatus having a tool changing device which has a plurality of respective upper and lower tool dies mounted in a tool holder, comprising

means for selectively moving non-operative ones of said lower tool dies to positions below the plane of conveyance of circular workpieces being processed by the slotting machine,

an indexing unit that can be rotated in steps carrying each circular workpiece during processing, and

tool holder guide means for movably guiding the tool holder along a straight guide path in a plane and tangential to the circle of rotation around said indexing unit, whereby tool changes can be effected by moving said tool holder along said straight guide path,

said slotting machine includes a processing station with a movable press ram that acts on said tool dies during processing of a workpiece, and

said tool changing device is operable to selectively position the tool die sets in the processing station to be acted on by the press ram wherein the tool holder is fitted with C-shaped carrier means for holding respective ones of the tools while the tools and carrier elements are at least one of inside and outside the processing station and during tool change.

4,461,069

DEVICE FOR INTRODUCING ANTI-MICROPHONY SPONGE INTO AN AIR-CORED COIL

Cesare Chiecchi, Vidardo, Italy, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 94,627, Nov. 15, 1979, Pat. No. 4,322,894. This application Oct. 15, 1981, Ser. No. 311,564

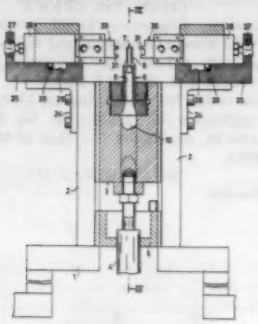
Claims priority, application Italy, Nov. 17, 1978, 29904/78[U]

Int. Cl.³ B23P *23/00*

U.S. Cl. 29—564.8 **9 Claims**

6. A device as claimed in claim 1 wherein said axially displaceable sleeve is adapted to be displaced so as come into

alignment with a mandrel of a winding machine on which said wire-wound coil is arranged, and said coil positioning means



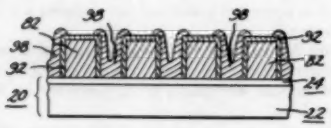
includes means for sliding the coil from said mandrel onto said end portion of the sleeve.

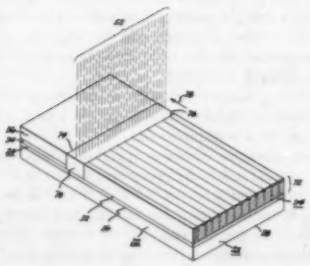
4,461,070

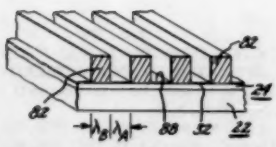
METHOD FOR MAKING EUTECTIC CHARGE-COUPLED DEVICES

Harvey E. Cline, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 28, 1982, Ser. No. 382,878
Int. Cl.[3] H01L *27/10*
U.S. Cl. 29—571 15 Claims







1. A method for making charge-coupled semiconductor devices comprising the steps of:

(a) providing a substrate suitable for the manufacture of charge-coupled devices;

(b) forming a thin film two phase lamellar metallic eutectic on said substrate from elements of at least 0.9999 purity;

(c) selectively removing one of the phases of said thin film lamellar metallic eutectic forming thereby a first array of spaced metallic gates of the remaining phase;

(d) applying a layer of an insulating material over at least the exposed surfaces of said spaced metallic gates of said first array;

(e) depositing a substantially continuous layer of a conducting material over the spaced insulated metallic gates of said first array and into the spaces between said spaced insulated metallic gates; and

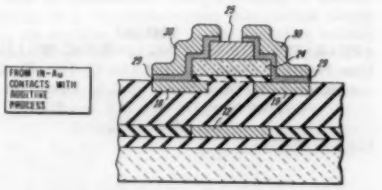
(f) preferentially removing segments of said continuous layer of a conducting material to form a second array of spaced metallic gates substantially juxtaposed from said metallic gates of said first array.

4,461,071

PHOTOLITHOGRAPHIC PROCESS FOR FABRICATING THIN FILM TRANSISTORS

Michael Poleshuk, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 23, 1982, Ser. No. 410,194
Int. Cl.[3] H01L *21/31*
U.S. Cl. 29—571 4 Claims



1. A method of photolithographically forming a thin film transistor of the type suitable for use as a driver of an element in a liquid crystal display, comprising the steps of:

(a) forming a gate electrode of a predetermined thickness of conductive material on a portion of a surface of a passivating coating on a substrate by subtractive processing;

(b) forming a first insulator layer on the remaining portions of the surface of said substrate coating not occupied by the gate electode, said insulator layer having a thickness substantially equal to the thickness of said gate electrode to thereby form a first planar surface;

(c) forming a uniformly thick gate insulator layer on said first planar surface;

(d) forming source and drain electrodes of predetermined equal thickness of conductive material on selected portions of said gate insulator layer by substractive processing;

(e) forming a second insulator layer on the remaining portions of the gate insulator layer not occupied by said source and drain electrodes, said second insulator layer having a thickness substantially equal to the thickness of said source and drain electrodes to thereby form a second planar surface;

(f) forming, on said second planar surface, a masking layer having a predetermined opening therein exposing a portion of said second planar surface so that portions of said source and drain electrodes and a portion of said second insulator layer between said source and drain electrodes which lie in the second planar surface are exposed;

(g) sequentially depositing, under continuous vacuum, a third insulator layer, a semiconductor layer, and a fourth insulator layer, respectively, on said masking layer and on the exposed portion of said second planar surface, so that the portions of the source and drain electrodes and the portion of the second insulator layer therebetween which

are exposed through the opening in said masking layer are covered by said sequentially deposited layers without the need of a spaced, movable shadow mask;

(h) removing said masking layer and the portions of the third insulator layer, the semiconductor layer, and the fourth insulator layer deposited thereon;

(i) selectively removing portions of said fourth insulator layer to define a transistor channel length and to expose selected portions of said semiconductor layer; and

(j) selectivly forming conductive contacts between the source and drain electrodes and said selected portions of the semiconductor layer.

4,461,072

METHOD FOR PREPAKING AN INSULATED GATE FIELD EFFECT TRANSISTOR

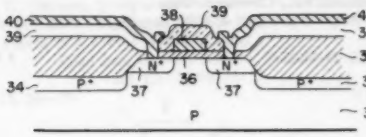
Kunihiko Wada, and Motoo Nakano, both of Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 215,822, Dec. 12, 1980. This application May 20, 1983, Ser. No. 483,701

Claims priority, application Japan, Dec. 28, 1979, 54/170983

Int. Cl.³ H01L *21/265*

U.S. Cl. 29—571 **11 Claims**



1. A method of manufacturing an insulated gate field effect transistor comprising the steps of

forming a silicon dioxide film on a single crystal silicon substrate having a surface deviated by an angle within a range of from 30.3° to 34° from the {100} crystallographic surface toward the {111} crystallographic surface,

forming a silicon nitride film on said silicon dioxide film,

patterning said silicon nitride film to include a portion remaining on a forming area for said insulated gate field effect transistor on said substrate wherein said forming area includes areas corresponding to the source and drain regions of said insulated gate field effect transistor,

forming a thermally oxidized film selectively on and embedded in said substrate using the remaining silicon nitride film as a mask,

removing said remaining silicon nitride film from said silicon dioxide film,

removing said silicon dioxide film on said forming area of said substrate,

forming a gate insulating film on said surface of said substrate in said forming area, said thermally oxidized film having a greater thickness than said gate insulating film,

forming a gate electrode on said gate insulating film for providing an electric field to said substrate across said gate insulating film; and

forming said source and drain regions using said gate electrode as a mask.

4,461,073

DEVICE FOR INSERTING AND EXTRACTING CIRCUIT MODULES WITH DUAL-IN-LINE LEADS

Robert V. Harringer, Joliet; Frank J. Nadherny, Downers Grove, and Robert O. Rada, Brookfield, all of Ill., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Oct. 27, 1982, Ser. No. 437,056

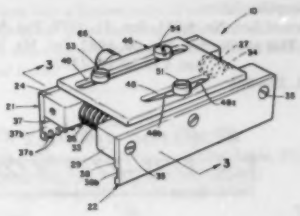
Int. Cl.³ H05K *13/04, 3/30*

U.S. Cl. 29—741 **15 Claims**

1. A device for selectively inserting the dual-in-line leads of a circuit module into and extracting them from respective lead-engaging receptacles of an associated support member, said device comprising:

a pair of mutually disposed gripping jaws;

guide rod means for interconnecting said jaws, said guide rod means including at least one guide rod, with compressively biased spring means associated therewith for normally biasing said jaws apart to a predetermined maximum open position, one end of at least said one guide rod being fixedly secured within a receiving bore of one of said jaws,



with the other end of said guide rod being retractably nested within a close-fitting bore formed in the other of said jaws; and

cover plate means displaceably confined on the upper surfaces of said jaws, and being for controllably limiting at least the maximum relative linear spring-biased displacement between said jaws, and selectively effecting temporary releasable locking of the jaws after a given circuit module has been gripped therebetween.

4,461,074

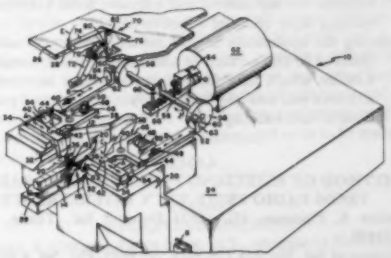
APPARATUS FOR ASSEMBLING ELECTRICAL CABLES TO ELECTRICAL CONNECTORS

Harley R. Holt, Forest Park, Ill., assignor to Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Mar. 22, 1982, Ser. No. 360,301

Int. Cl.³ H01R *43/04*

U.S. Cl. 29—749 **15 Claims**



1. Apparatus for assembling electrical cables to an electrical connector having a cable clamp for securing a multi-wire cable in position with its individual wires terminated to individual contacts on the connector, comprising:

a base;

locator means on said base for securing a connector in position to receive an electrical cable;

carriage means movably mounted on said base for positioning termination means along the length of the connector;

jaw means mounted on said base for movement toward and away from a properly positioned connector for closing the cable clamp thereon to provide strain relief for said individual wires;

actuation means mounted on said base for driving said jaw means; and

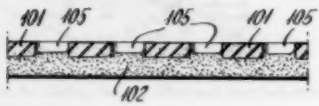
switch means coupled to said actuation means for commencing operation of said actuation means, said switch means including a momentary contact switch; a spring biased actuator for said switch; and override means for maintaining said switch closed during a limited portion of travel of said carriage means.

4,461,075

METHOD OF MAKING A STIMULATING ELECTRODE

William D. Bailey, Wayzata, Minn., assignor to Stimtech, Inc., Minneapolis, Minn.

Division of Ser. No. 8,011, Jan. 31, 1979, Pat. No. 4,367,755.
This application Jun. 30, 1982, Ser. No. 393,918
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—825 **2 Claims**



1. The method of constructing a transcutaneous electrical nerve stimulation electrode for delivering electrical energy to a patient comprising:

perforating an electrically conductive silicone rubber backing layer with a grid of regularly spaced apertures completely therethrough;

melting a quantity of electrically conductive adhesive material;

applying said melted quantity of adhesive material to one surface of said backing layer and permitting said melted quantity of adhesive to flow at least partially into the interior of said perforations in said backing layer;

cooling said melted quantity of adhesive material to form an adhesive pad on said surface of said layer to form a corresponding plurality of projections on said adhesive pad extending into said plurality of perforations in said backing layer so as to form a tight mechanical contact with at least a part of the inner surface of said perforations to increase the mechanical and adhesive bond between said backing layer and said adhesive pad;

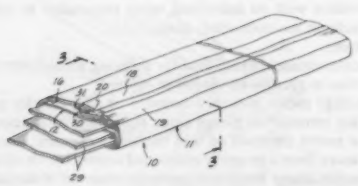
during the application of said melted quantity of adhesive material to said surface of said backing layer, eliminating bubbles whcih may form at the interface between said adhesive pad and said backing layer through said perforations in said backing layer.

4,461,076

METHOD OF SHIELDING PLURAL RIBBON CABLES FROM RADIO FREQUENCY INTERFERENCE

Walter A. Plummer, III, 14831 Foxcroft Rd., Tustin, Calif. 92680

Division of Ser. No. 325,725, Nov. 30, 1981, Pat. No. 4,409,427.
This application Jun. 3, 1983, Ser. No. 500,930
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—825 **8 Claims**



1. That method of providing a unitary tubular enclosure for a plurality of ribbon cables to shield the same from electrical interference with one another and from extraneous electrical fields and signals which method comprises:

providing a pleated elongated flexible strip of electrical shielding material to provide elongated cells adapted to receive a respective ribbon cable extending lengthwise of said cells;

attaching one longitudinal edge of said pleated strip to one lateral edge of a seamed tubular jacket having an inner lining of conductive foil and an outer layer of impervious nonconductive material equipped with separable interlocking seam means along the lateral edge portions thereof; and

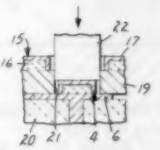
providing the exterior of one edge of said pleated strip with electrically conductive means in intimate conductive relation to said electrical shielding material and positioned to lie in contact with said conductive foil when the seam of said tubular jacket is closed.

4,461,077

METHOD FOR PREPARING CERAMIC ARTICLES HAVING RAISED, SELECTIVELY METALLIZED ELECTRICAL CONTACT POINTS

Billy M. Hargis, Hugo, Minn., assignor to General Electric Ceramics, Inc., Cleveland, Ohio

Filed Oct. 4, 1982, Ser. No. 432,636
Int. Cl.³ H05K *3/04*
U.S. Cl. 29—843 **5 Claims**



1. A method of manufacturing a ceramic article having raised electrical terminals comprising the steps of

providing a body of unfired ceramic material having a predetermined metallized electrical pattern on at least a portion of an external surface;

providing a sheet of unfired ceramic material bearing a predetermined array of electrical contacts which are selectively metallized on at least a portion of their horizontal surfaces;

separating said electrical contacts from said sheet and contacting said terminals to said body to provide an unfired ceramic structure having electrical interconnection between said pattern and said contacts; and

firing said structure to maturity.

4,461,078

STYLING RAZOR

Reginald V. Carreker, 4411 Fernhill Rd., Wheaton, Md. 20906

Filed Feb. 1, 1982, Ser. No. 344,715
Int. Cl.³ B26B *21/00*
U.S. Cl. 30—47 **9 Claims**

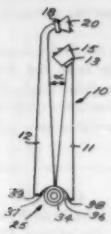
1. A razor assembly comprising:

a handle including first and second handle portions each elongated in a dimension of elongation;

a first razor head means mounted at one end of said handle first portion for holding a first razor having a cutting edge, said razor having a predetermined width W, so that said first razor edge is substantially perpendicular to said handle first portion dimension of elongation;

a second razor head means, mounted at one end of said handle second portion, for holding a second razor having a cutting edge, said second razor having a predetermined width W', wherein W' is substantially less than W so that

said second razor edge is substantially perpendicular to said handle second portion dimension of elongation; and



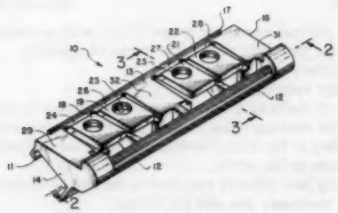
means for interconnecting said handle first and second portions.

4,461,079

METHOD AND APPARATUS FOR CHANGING THE SHAVING ATTITUDE OF A BLADE PACKAGE

John T. Ciaffone, Bridgeport, and Ernest A. Ortiz, Cheshire, both of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 1, 1982, Ser. No. 383,643
Int. Cl.³ B26B *21/22*
U.S. Cl. 30—79 3 Claims



1. In a razor head including a body portion of the type which makes a slidable and releasable connection with a handle, a guard bar fixed to a leading edge of the body portion, a cap, a plurality of blade seats, a blade spacer and a pair of single edge blades straddling the spacer, the improvement comprising:

each of said plurality of blade seats being provided with at least one aperture, each of said blades and said spacer being provided with apertures aligned with said apertures in said plurality of seats, fastening means connected to said cap and extending through said aligned apertures in said blades, spacer, and blade seats for connecting the cap, blade seat, blade spacer and blades together permanently into a relatively rigid unit, and hinge means connecting the blade seats to the body portion so that shaving forces acting on the cap cause the unit to pivot relative to the body portion without disturbing the relative position of the blades with respect to one another.

4,461,080

EVISCERATING AND SURVIVAL TOOL

Winston O. Olson, 5806 Dorsett Dr., Madison, Wis. 53711

Filed Aug. 17, 1981, Ser. No. 293,154
Int. Cl.³ B26B *11/00*
U.S. Cl. 30—144 2 Claims

1. An eviscerating and survival tool comprising a shaft having a handle at one end, a claw-like hook at the other end, said claw-like hook containing at least two arcuately shaped tines defining at least one slot therebetween, said tines embracing about [illegible]° of arc and being characterized by blunted edges and points, a saw blade demountably attached lengthwise to said shaft between said handle and said claw-like hook nearer the end containing said claw-like hook, and knife means having a cutting portion and a pivot portion, a pivot means bridging

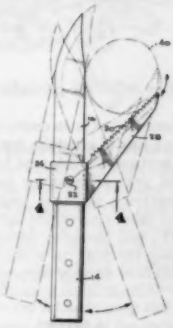
said slot between two adjacent ones of said tines of said claw-like hook, said pivot portion being connected to said pivot means thereby allowing pivotal movement of said knife means relative to said tines.

4,461,081

KNIFE-SAW IMPLEMENT

Thomas Gaskins, Cypress Knee Museum, Palmdale, Fla. 33944

Filed Jan. 27, 1983, Ser. No. 461,452
Int. Cl.³ B26B *11/00;* B25F *1/00*
U.S. Cl. 30—144 7 Claims



1. A multipurpose tool comprising a knife including a blade and a handle, connector means removably connectable to said blade in the area adjacent the handle of the knife and a saw blade extending outwardly from said connector means at an acute angle relative to said blade wherein said saw blade includes a saw-tooth edge facing one edge of said blade and said connector means comprises, a hollow sleeve member including a slot extending therethrough dimensioned so as to be matingly fittable over said knife blade.

4,461,082

ENGRAVING MACHINE

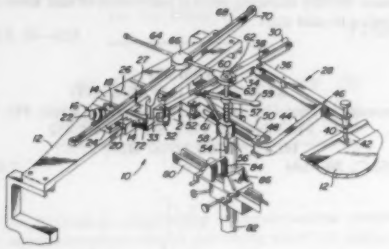
Marvin J. Nissman, Great Neck, N.Y., assignor to New Hermes Incorporated, New York, N.Y.

Filed Jul. 7, 1982, Ser. No. 395,937
Int. Cl.³ B41F *1/07;* B43L *13/10*
U.S. Cl. 33—25 B 10 Claims

1. In an engraving machine comprising a frame, a slide on said frame, means on said frame for adjusting said slide in a first horizontal direction, a pantograph, said pantograph being pivoted to said slide for pivotable movement about a vertical axis, an elongated tool holder supported by said pantograph, and means removably mounted on said slide and removably connected to said tool holder for preventing said tool holder from pivoting about its longitudinal axis, said means including a guide rod horizontally disposed and generally perpendicular to said first direction, said means including a support for said guide rod, said support being releasably mounted only on said slide, means for preventing said support from pivoting relative to said slide, and means movably supported by said guide rod

and connected to said tool holder for guiding movement of the tool holder in a horizontal direction parallel to said guide rod.

9. In an engraving machine comprising a frame, a slide on said frame, means on said frame for adjusting said slide in a horizontal direction, a pantograph, said pantograph being pivoted to said slide for pivotable movement about a vertical axis of approximately 135°, an elongated tool holder supported by said pantograph, a bracket on said slide, means supported by said bracket for preventing said tool holder from pivoting about its longitudinal axis, said means having converging surfaces which are vertically disposed, said surfaces cooperating



with said bracket to define the pivotable range of said pantograph.

10. An attachment for use in an engraving machine comprising a yoke having a pair of generally horizontal arms supporting the ends of a horizontally disposed rod, a mounting on the lower end of said yoke adapted for mating contact with a bracket of an engraving machine, said mounting including vertically disposed inner converging surfaces whose included angle is about 135°, said mounting having fastener means for facilitating coupling the yoke to a bracket on an engraving machine, and a follower slidably supported by said rod.

4,461,083

LENGTH OR ANGLE MEASURING INSTRUMENT

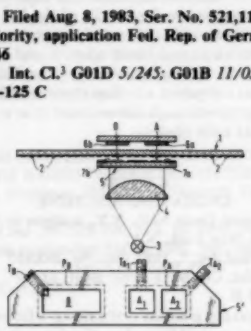
Alfons Ernst, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Aug. 8, 1983, Ser. No. 521,117

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1982, 3229846

Int. Cl.³ **G01D** *5/245;* **G01B** *11/02*

U.S. Cl. 33—125 C **4 Claims**



1. In a length or angle measuring apparatus comprising a measuring scale and a scanning unit adapted to scan the scale; wherein the scanning unit comprises a scanning plate which comprises at least first and second scanning fields, phase shifted with respect to one another for generating respective first and second scanning signals which are phase shifted with respect to one another; and means for directing light at the scanning plate; the improvement comprising:

first and second partial scanning fields included in said scanning field, said first and second partial scanning fields each oriented at a respective phase angle such that the first and second partial scanning fields are phase shifted with respect to one another;

means for covering a selectable portion of at least one of the first and second partial scanning fields to an adjustable extent; and

means for generating the first scanning signal as a function of light modulated by both the first and second scanning fields, such that the phase angle of the first scanning signal is adjustable in accordance with the extent to which the at least one of the partial scanning fields is covered by the covering means.

4,461,084

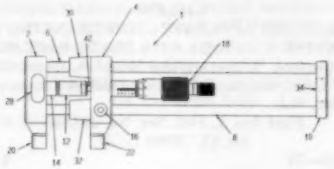
INTERNAL MEASURING GAUGE

Roger K. Slocum, 3947 Via Milano, Campbell, Calif. 95008

Filed Jun. 25, 1982, Ser. No. 392,298

Int. Cl.³ **G01B** *5/14*

U.S. Cl. 33—165 **9 Claims**



1. An internal measuring gauge for use with precision length spacers for extended range, said gauge comprising:

a stationary jaw;

a bridge member;

a pair of shafts each having one end permanently connected to the stationary jaw and the other end permanently connected to the bridge with shafts being substantially parallel one to the other;

a sliding jaw slideably mounted on the pair of shafts between the stationary jaw and the bridge;

attachment means for attaching precision length means to the stationary jaw on the side toward the sliding jaw, said attachment means includes:

a mounting boss affixed to the side of the stationary jaw adjacent the measuring stem of the micrometer head; and

clamping collar means for captively retaining a precision length means in communication with the mounting boss; and

micrometer head means affixed to the sliding jaw, on the side toward the bridge member, the micrometer head means including a measuring stem which extends through a hole defined in the sliding jaw means in alignment with the attachment means.

4,461,085

GONIOMETER

Michael E. Dewar, London; Kenneth E. Ackerley, East Croydon, both of England, and Lawrence E. Carlson, Boulder, Colo., assignors to National Research Development Corporation, London, England

Filed Mar. 22, 1982, Ser. No. 360,481

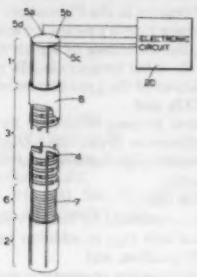
Claims priority, application United Kingdom, Mar. 27, 1981, 8109663

Int. Cl.³ **G01B** *5/20*

U.S. Cl. 33—174 L **10 Claims**

1. A goniometer comprising an elongate body having at least a main portion which is flexible but resilient to torsion, a plurality of sensors each attached to the elongate body adjacent both ends of said portion and extending longitudinally of the body, at locations spaced from one another around the body, the

sensors being extensible and such that an electrical property thereof varies with varying length thereof, and a circuit connected to the sensors for converting variations in said electrical property into a measure of the relative angular disposition of the ends of the body.

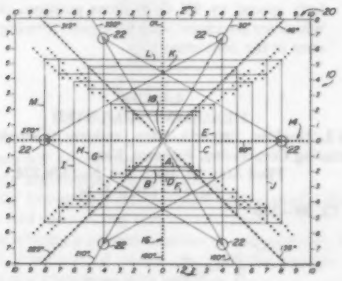


4,461,086

MATTING DEVICE

Diana E. Segletes, 2344 E. Allegheny Ave., Philadelphia, Pa. 19134

Filed Jun. 10, 1982, Ser. No. 386,928
Int. Cl.³ B43L *13/00*
U.S. Cl. 33—189 **10 Claims**



1. Apparatus for locating pictures of any kind or size on at least one mat or mount comprising:

a template of transparent, flexible, semi-rigid material of a preselected thickness having guide numbers along each edge of said picture on the at least one mat or mount and having guide holes extending radially outward from a center point on said template to further align the picture in a preselected position on either the at least one mat or mount by marking the at least one mat or mount through the guide holes corresponding to the particular dimensions of the picture by a marking means.

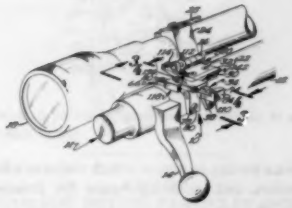
4,461,087

FOLDABLE PEEP SIGHT

Ray Norman, R.R. 2, Box 135, Hibbing, Minn. 55746

Filed Jul. 7, 1982, Ser. No. 395,934
Int. Cl.³ F41G *1/38*
U.S. Cl. 33—249 **12 Claims**

1. Foldable peep sight for use with a firearm having a gun barrel and a front sight comprising, in combination: a generally L-shaped body, with the L-shaped body including an elongaged arm having a first free end and a second end and a leg having a first free end and a second end, with the second ends of the arm and the leg being interconnected; a mount for attachment to the firearm; a pivot pin threadably engaged in the mount and extending through the arm of the L-shaped body for pivotally mounting the body about a horizontal axis generally parallel to but spaced from the gun barrel, with the arm of the body having a first pivotal, non-sighting position adjacent the gun barrel and a second pivotal, sighting position spaced from the gun barrel; means for biasing the arm to its second pivotal position comprising a spring extending between the first end of the leg of the body and the mount; elongated slots formed in the peep sighting member; members threadably engaged in the arm of the body which extend through the elongated slots of the peep sighting member for allowing the variable positioning of the peep sighting member on the arm of the body; an arm abutting member; means for positioning the arm abutting member to abut with the arm to limit the amount the arm pivots about the horizontal axis under the bias of the spring, with the elongated slots and the arm abutting member allowing the alignment of the peep sight relative to the mount for alignment with the front sight to allow aiming of the firearm by aligning the firearm to have the peep sight and the front sight in line with the target; a scope sight; means for pivotally mounting the scope sight to the firearm from a first, sighting position to a second, non-sighting position, with the scope sight abutting with the peep sighting member in its first, sighting position to move the foldable peep sight from its second, sighting position against the bias of the spring to its first, non-sighting position, and with the second position of the scope sight being in a non-abutting, spaced relation from the peep sighting member allowing the arm to move from its first, non-sighting position to its second, sighting position under the bias of the spring.



4,461,088

SURVEY APPARATUS AND METHOD EMPLOYING CANTED TILT SENSOR

Brett H. Van Steenwyk, San Marino, Calif., assignor to Applied Technologies Associates, San Marino, Calif.

Continuation of Ser. No. 36,328, May 7, 1979, Pat. No. 4,265,028. This application Apr. 30, 1981, Ser. No. 258,896
The portion of the term of this patent subsequent to May 5, 1998, has been disclaimed.
Int. Cl.³ G01C *19/38*; E21B *4/024*
U.S. Cl. 33—304 **17 Claims**

1. In a borehole navigation apparatus, the combination comprising

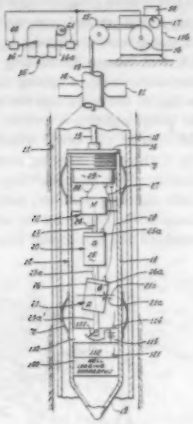
(a) a carrier movable lengthwise in the borehole,

(b) means on the carrier defining an axis of rotation,

(c) a tilt sensitive device located interiorly of the carrier and having a sensitive axis for sensing tilt, said axis extending in a cant direction having components respectively along said axis of rotation and also along perpendiculars to said axis of rotation, such device being rotatable about said axis of rotation,

(d) drive means on the carrier for rotating said device about

said axis of rotation, the extent of said cant remaining fixed during said rotation, and



(e) said device having an output which varies as a function of said rotation, and including means for processing said output.

4,461,089

INSTRUMENT FOR THE AUTOMATIC DETERMINATION OF NORTH DIRECTION

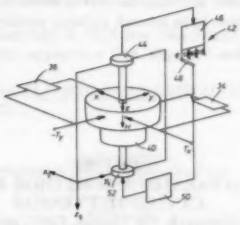
Uwe Krogmann, Überlingen-Nussdorf, Fed. Rep. of Germany, assignor to Bodenseewerk Geratetechnik GmbH, Fed. Rep. of Germany

Filed Oct. 29, 1982, Ser. No. 437,813

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1981, 3143527

Int. Cl.³ G01C *19/38*

U.S. Cl. 33—324 **5 Claims**



1. Instrument for the automatic determination of North direction by means of a gyro influenced by the rotation of the earth, wherein

(a) the gyro is a two-axis gyro, the spin axis (z) of which is substantially vertical,

(b) a position pickoff (**30,24**) and a torquer (**32,36**) are provided on each of the two mutually perpendicular input axes (x,y) of the gyro,

(c) the signal of each position pickoff (**30,24**) associated with one input axis (x,y) is applied crosswise to the torquer (**26,32**) of the respective other input axis (y,x) to restrain the gyro electrically with its spin axis (z) to the vertical,

(d) the gyro is rotatable by a servomechanism (**42**) from an initial position (0°-position) through 180° about a vertical axis (Z_G) coincident with the spin axis (z) into a 180°-position, and

(e) a north deviation computer (FIG. **6**) is provided, which comprises

(e_1) memories (**54,58**) for storing the two signals supplied to the torquers in the 0°-position,

(e_2) difference forming means for generating signals representing the difference of signals which are supplied to one or the other torquer (**26,32**), respectively, in different positions of the gyro determined by the servomechanism (**42**), and

(e_3) quotient forming means for forming the quotient of such differences to provide a trigonometric function of the azimuth angle between one input axis of the gyro and North,

characterized in that

(f) the gyro is rotatable by the servomechanism (**42**) about the vertical axis (z_G) in addition into a 90°-position and into a 270°-position, and

(g) the North deviation computer comprises memories (**54** to **68**) for storing the respective two signals supplied to the torquers in the 180°-position, the 90°-position and the 270°-position, and

(h) the quotient forming means (**78**) form the respective quotient of differences of signals such that

(h_1) each difference is formed of two signals which are supplied to the same torquer (**26,32**) in two positions of the gyro angularly spaced by 180°,

(h_2) the signals which form the difference in the numerator are supplied to the same torquer (**26,32**) as the signals which form the difference in the denominator of this quotient, and

(h_3) the difference in the numerator is formed of signals which are associated with positions of the gyro angularly spaced by 90° from those positions of the gyro which are associated with the signals forming the difference in the denominator.

4,461,090

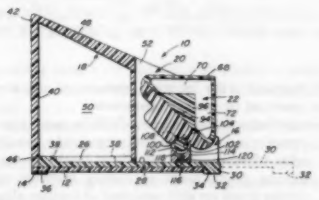
HEADLAMP ADJUSTER

Evan L. Hopkins, Emporia, Kans., assignor to Hopkins Manufacturing Corporation, Emporia, Kans.

Filed May 10, 1982, Ser. No. 376,274

Int. Cl.³ G01B *5/24*

U.S. Cl. 33—335 **6 Claims**



1. A vehicle headlamp adjuster for adjusting the vertical orientation of said headlamps in a vehicle resting on a surface, comprising:

single surface contact means for contacting first said surface on which said vehicle rests, and then said vehicle headlamps,

said surface contact means including headlamp contacting means for contacting said headlamp so that when said surface contact means is pressed against said headlamp, said surface contact means is parallel to said headlamp,

level indication means adjustably mounted on said single surface contact means comprising:

first level indicating means for indicating a horizontal level position when said single surface contact means is contacting said surface,

second level indicating means for indicating a horizontal level position when said single surface contact means is perpendicular to said surface, and

means for adjusting said level indication means relative to said single surface contact means.

4,461,091
PLUMB BOB
Norman P. Gammon, San Francisco, Calif., assignor to Gammon Reel, Inc., San Francisco, Calif.
Filed Jun. 11, 1982, Ser. No. 387,374
Int. Cl.³ G01C *15/10*
U.S. Cl. 33—392 **21 Claims**

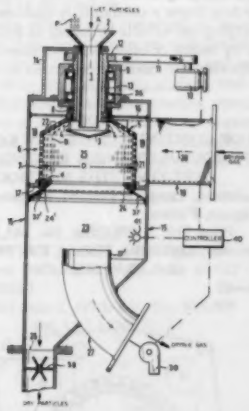
1. A plumb bob which comprises;
a relatively high-density metallic core;
a relatively low-density frustoconical plastic shell defining an axis and surrounding said metallic core;
means for affixing a pointed member to said relatively low-density frustoconical plastic shell at the smaller end thereof and coincident with said axis;
said plastic shell having a continuous smooth surfaced knobbed extension at its larger end adapted to receive a flexible support member on said axis.

4,461,092
SET SQUARE
Donald L. Hore, Bristol, England, assignor to Paraflux Limited, Bristol, England
Filed Apr. 26, 1982, Ser. No. 372,085
Int. Cl.³ B43L *13/00*
U.S. Cl. 33—474 **10 Claims**

1. A substantially triangular set square having three external straight edge portions whereof first and second edge portions define an angle of 60°, second and third edge portions define an angle of 30°, and the third and first edge portions define an angle of 90°: said square having an internal substantially triangular aperture having three internal straight edge portions whereof the first is at an angle of 15° to said first external edge portion and at angle of 45° to said second external edge portion, the second is at an angle of 15° to said second external edge portion and at angles of 45° to said first and third external edge portions: and the third is at an angle of 15° to said third external edge portion: whereby each external straight portion

has a respective pair of internal edge portions at angles of 15° and 45° respectively.

4,461,093
APPARATUS FOR DRYING PARTICLES AND METHOD OF OPERATING THE APPARATUS
Günther Hultsch, Oberschleissheim; Siegfried Baumgartner, Munich; Harald Bock, Munich, and Reinhold Schilp, Munich, all of Fed. Rep. of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Mar. 9, 1982, Ser. No. 356,521
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1981, 3109140
Int. Cl.³ F26B *5/08*
U.S. Cl. 34—8 **10 Claims**



1. A method of operating a particle-treating apparatus having a hollow foraminous drum centered on and rotatable about an upright axis, said method comprising the steps of:
feeding particles into the upper portion of the interior of said drum;
rotating said drum about said axis at a speed sufficient to form said particles into an annular body lying on the inner surface of said drum;
passing a drying as radially inward through said drum into the interior thereof and withdrawing said gas axially from said interior to at least partically fluidize said body and

dry said particles, the rate of gas flow through said drum and the rotation rate of said drum being such that said body moves axially down in said interior toward the lower edge of said drum, this moving down being assisted by gravity of said particles; and

collecting said particles beneath said drum as said body moves off said lower edge thereof.

4,461,094

PROCESS AND APPARATUS FOR DRYING VEHICLES

Heinz H. Schnalke, Goetzenhain, Fed. Rep. of Germany, assignor to Böhm & Braunwalder KG, Augsburg, Fed. Rep. of Germany

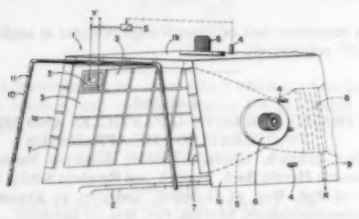
PCT No. PCT/EP81/00208, 371 Date Aug. 4, 1982, 102(e) Date Aug. 4, 1982, PCT Pub. No. WO82/02366, PCT Pub. Date Jul. 22, 1982

PCT Filed Dec. 29, 1981, Ser. No. 405,185

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1980, 3049465

Int. Cl.³ F26B *3/00, 7/00, 5/32, 19/00*

U.S. Cl. 34—9 13 Claims



1. A method for drying a vehicle in a washing establishment after a washing or clear rinsing step, said method comprising:

(a) after washing or clear rinsing the vehicle and before drying it applying water containing a wetting agent to the vehicle to achieve a substantially uniform thin water film,

(b) then drying the vehicle by means of infrared ray generators or by means of other heat ray generators, and

(c) withdrawing the moist air produced by said drying step.

4,461,095

METHOD OF CONTINUOUS DRYING OF A PAPER OR OTHER POROUS WEB AND A DRYING DEVICE FOR APPLYING THIS METHOD

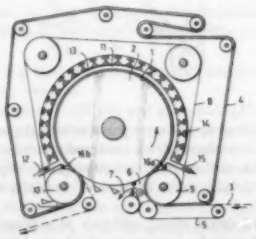
Jukka A. Lehtinen, Tampere, Finland, assignor to Oy Tampella A.B., Tampere, Finland

Filed Feb. 2, 1982, Ser. No. 345,164

Claims priority, application Finland, Feb. 19, 1981, 810507

Int. Cl.³ F26B *3/24*

U.S. Cl. 34—41 8 Claims



1. A method of continuous drying of a paper, cardboard, or other porous web, according to which method a web (3; 21) and a drying felt or wire (4; 22) supporting said web are subjected to an air removal treatment, the drying felt or wire are passed between two moving, air impermeable surface elements (1, 8; 20, 30) having good heat conducting properties, which elements enclose the web along its whole width, the surface element (1; 20) contacting the web is subjected to heating and the surface element (8; 30) contacting the drying felt or wire is subjected to cooling by a liquid, in order to condense water evaporating from the web into the drying felt or wire, the drying felt or wire is separated from the dry web after leaving said surface elements and the condensed water is removed from the drying felt or wire, characterized in that the temperature of the liquid used for cooling the cooled surface (8; 30) is at least during a part of the cooling maintained above 100° C. and the pressure at least at such a level that the liquid is prevented from boiling.

4,461,096

DEHYDRATION APPARATUS

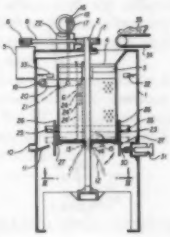
Tomosaburo Suzuki, Tsukui, Japan, assignor to Kabushiki Kaisha Daisei Kikai, Tokyo, Japan

Filed Mar. 3, 1982, Ser. No. 354,350

Claims priority, application Japan, Aug. 29, 1981, 56-135796

Int. Cl.³ F26B *11/08*

U.S. Cl. 34—56 2 Claims



1. A dehydration apparatus for dehydrating materials, comprising:

a dehydrating vessel having a bottom plate;

means for rotating said vessel;

means for opening said bottom plate and discharging dehydrated materials from said vessel;

hook means mounted on said dehydrating vessel for maintaining said bottom plate in a closed position and at least one projectile bar for axial movement toward and away from said hook means, said projectile bar being movable into engagement at the end of the dehydrating cycle to disengage the hook means so as to allow the bottom plate to pivot downwardly, and

means operatively thereafter to pivot the bottom plate to a horizontal position thereby closing the bottom of said dehydrating vessel.

4,461,097

AERATOR

David C. Thornton, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Dec. 31, 1981, Ser. No. 336,053

Int. Cl.³ A61L *2/20, 2/26*; F26B *3/04, 21/00*

U.S. Cl. 34—233 6 Claims

1. An inflatable aerator comprising:

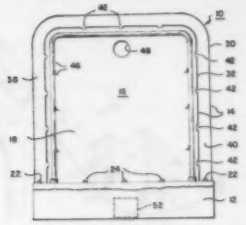
a base;

an inflatable twin walled barrier attached to said base such that a chamber is defined within said barrier when said barrier is inflated to a predetermined shape, said barrier being formed of an inner layer and an outer layer such that a space is defined therebetween;

means for permitting loading and unloading of said chamber;

means for causing air to flow from said base into said space

between said inner layer and said outer layer of said barrier at sufficient pressure to inflate said barrier and for causing air to flow from said base through said chamber; said inner layer of said barrier having a plurality of means for communicating air flow from said space through said chamber, said communicating means being arranged such that the number and size of said communicating means



decreases as the portion of said inner layer having such communicating means extends further away from said base, thereby providing a gradually decreasing rate of air flow from said space into said chamber as the distance from said base to said communicating means increases, such that optimum air circulation for aeration of the goods disposed within said chmaber is achieved; and

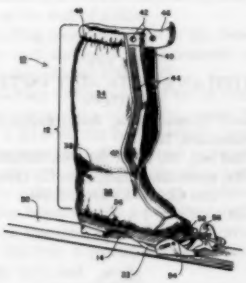
means for allowing air to exit said chamber.

4,461,098

GAITOR WITH IMPROVED MOISTURE PENETRATION PROTECTION

David Diegelman, P.O. Box 1129, Tahoe City, Calif. 95730

Filed Jan. 17, 1983, Ser. No. 458,572
Int. Cl.³ A41D *17/00*
U.S. Cl. 36—2 R **9 Claims**



1. A gaitor, comprising an upper fabric portion configured to be wrapped around a leg of a wearer and including a releasable means for fastening the fabric portion around the leg, said fabric portion having a lower edge, and a flexible, water impervious gasket configured to conform closely to a shoe worn by the wearer and having an upper rim, said gasket being fastened to said fabric portion by means of a seam around the lower edge of said fabric portion, the lower edge of said fabric portion being folded up to lie against the upper rim of said gasket, and the seam fastening the folded up lower edge against the upper rim of said gasket, said upper fabric portion having an upper and a lower half, the upper half being formed from a fabric treated to allow moisture to move outward from the wearer but block moisture from passing through the fabric toward the wearer, and the lower half being formed from an insulating fabric.

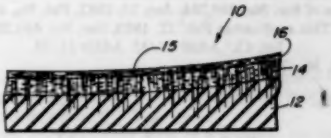
6. In a gaitor having an upper fabric portion joined by a seam to a flexible, water impervious gasket configured to conform closely to a shoe worn by a wearer, the improvement comprising a structural member flexible along its length and having substantial rigidity normal to its length, said structural member being positioned along the seam to prevent folding of said gasket at a toe portion of said gasket and said fabric portion, where folding is prone to occur.

4,461,099

MOLDED ODOR-ABSORBING LAMINATE

Richard L. Bailly, Beechwood Cir., Boxford, Mass. 01921

Filed Feb. 28, 1983, Ser. No. 470,606
Int. Cl.³ A43B *13/38, 7/06;* **B32B** *5/06, 5/18*
U.S. Cl. 36—44 **20 Claims**



1. A laminate having a surface conforming substantially to the contours of a surface region of the human body, the laminate comprising:

a foamed thermoplastic first layer having a thermoformed surface conforming to the contours of said body surface region;

a second layer affixed to and conforming to the contours of said thermoformed surface comprising a multiplicity of activated charcoal particles disposed within a binder; and

a third layer comprising a multiplicity of hydrophobic fibers, a substantial fraction of which penetrate said second layer, said fibers together comprising a non-woven, substantially continuous layer affixed to said second layer and defining a multiplicity of air pockets;

said layers being effective to cooperate in use to maintain fibers of said third layer in contact with perspiration from said body surface, to wick perspiration and odor-causing substances away from said body surface, and to absorb a substantial fraction of said odor-causing substances.

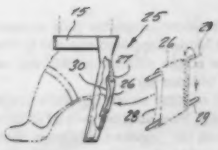
2. The laminate of claim 1 comprising an innersole wherein said thermoformed surface conforms substantially to a portion of the sole of the human foot and includes an arch support section.

4,461,100

DRIVER'S HEEL PROTECTOR

Ira L. Minor, and Barbara A. Noey, both of 669 E. 84th St., Chicago, Ill. 60619

Filed Jun. 2, 1983, Ser. No. 500,409
Int. Cl.³ A43B *13/22*
U.S. Cl. 36—72 B **1 Claim**



1. A driver's heel protector, comprising, in combination, a shield for placement against the rear of a shoe, a lower strap for securing the lower portion of said shield to said shoe, and an upper strap for securement of the upper portion of said shield

to said shoe; said shield being made from a flexible material, so as to conform to the contour of said shoe rear, and said straps being made from elastic; co-operative loop pile strips being provided on said upper strap for adjustability of length thereof; and an opening in the rear of said shield and a pad in said opening having a rear side that is flush with a rear side of said shield, said pad comprising a flexible, endless pad material rotatably mounted around a pair of spaced-apart pins secured to said shield, and means being provided to prevent said pad from rubbing against the surface of said shoe.

4,461,101

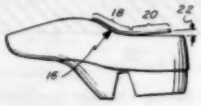
MOLDED SHANKS

Steven M. LeBaron, Woburn, Mass., assignor to Bush Universal, Inc., Woburn, Mass.

Division of Ser. No. 339,784, Jan. 15, 1982, Pat. No. 4,392,266. This application Feb. 22, 1983, Ser. No. 468,200

Int. Cl.³ A43B *13/42*; A43D *31/04*

U.S. Cl. 36—76 C **2 Claims**



1. In a shoe assembly which includes an insole, an upper adapted to be lasted to the insole, a heel and a shank member, the shank member being formed from a resinous material adhered to the bottom of the insole and in a configuration which substantially conforms to the bottom of the insole, the improvement comprising:

the heel end of the shank member being unadhered to the insole and defining a spring shank configuration, said heel end of the shank member being adapted to be securely captured between the insole and the heel when the heel is attached to the heel end of the shoe assembly, said shank member having a curvature which, when relaxed, is more arched, at its heel end, than the corresponding portion of the last on which said shoe assembly is manufactured,

whereby when said heel end of the shank member is captured securely between the heel and the insole while on the last the shank member will be stressed so as to create a temporary spring force tending to increase the arch of said shoe assembly,

whereby when said shoe assembly is removed from the last said spring force will bend the shoe assembly in a direction tending to increase the arch thereby tightening the top line of the upper and tending to improve the tread of the heel.

4,461,102

SHOE WITH INTERCHANGEABLE SHOE STRAPS HAVING SPRING CONNECTORS

Cheryl A. DeVincentis, 102-21 Metropolitan Ave., Forest Hills, N.Y. 11357

Filed Jun. 16, 1982, Ser. No. 388,882

Int. Cl.³ A43B *3/24, 3/12*

U.S. Cl. 36—101 **12 Claims**

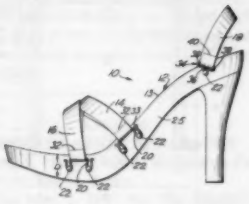
11. A shoe with interchangeable shoe straps comprising:

a lower portion having opposed top and bottom surfaces and opposed side edges extending between and connecting said top and bottom surfaces;

at least one pair of strap mounting studs extending from one said edge and at least another pair of strap mounting studs extending from the opposed side edge thereof;

at least one pair of U-shaped spring connectors each have a base portion and two opposed legs, the base portion of each said U-shaped spring connector defining a strap mounting portion to which a strap may be connected and each said leg defining a resilient loop spring, said strap mounting portion of said U-shaped spring connector being bowed toward the open end of the U-shape thereby providing increased resiliency to said U-shaped spring connector said loop springs of one spring connector in each said pair of spring connectors engaging said strap mounting studs extending from one said side edge and the loop springs of the other spring connector in each said pair of spring connectors engaging the strap mounting studs extending from the opposed side edge;

and



an elongated strap for each said pair of spring connectors, said elongated strap having opposed ends, said opposed ends being connected respectively to the strap mounting portions of each spring connector in said pair of spring connectors whereby the pair of spring connectors and the associated strap define an upper portion of said shoe and whereby said straps and said spring connectors resiliently yield to forces exerted thereon and are removably mounted to said strap mounting studs.

4,461,103

SKI BOOT WITH AN ELASTICALLY INCLINABLE LEG PORTION

Giuseppe Annovi, Montebelluna, Italy, assignor to Dolomite S.p.A., Montebelluna, Italy

Filed Sep. 18, 1981, Ser. No. 303,592

Claims priority, application Italy, Dec. 15, 1980, 61981/80[U]

Int. Cl.³ A43B *5/04, 5/00*

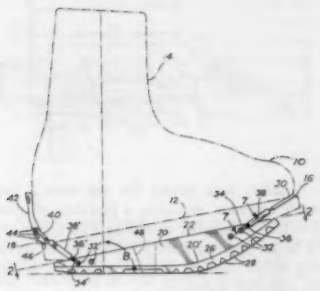
U.S. Cl. 36—121 **4 Claims**

4. In a ski boot, an elastically inclinable leg portion, a stiffening element on the front of the boot having substantially the profile of the boot and being adherent to and substantially coextensive lengthwise with the tongue of the boot substantially for the entire length of the tongue, and means attaching the stiffening element partially to the leg portion and/or foot portion of the boot.

4,461,104
REMOVABLE WALKING ATTACHMENT FOR SKI BOOTS

Carston R. Calkin, Portland, and Pasqualle Trotti, Tigard, both of Oreg., assignors to Skedco, Inc., Portland, Oreg.

Filed Jun. 18, 1982, Ser. No. 390,068
Int. Cl.³ A43B 5/00; A43D 5/00
U.S. Cl. 36—132 4 Claims



1. For use with a conventional snow ski boot which includes a boot body, a sole, and toe and heel binding ledges, a removable walking attachment comprising:

(a) an elongated body having a flat top side and an curved bottom side, the body being of thickest dimension intermediate its ends in an area corresponding substantially to the position of the ball of a foot,

(b) toe attaching means mounted to the forward portion of the body and configured to releasably engage the toe binding ledge of a ski boot, and

(c) heel attaching means mounted to the rear portion of the body and arranged to releasably engage the heel binding lenge of a ski boot, the heel attaching means comprising:

(1) A substantially U-shaped strap secured pivotally at its free ends to the opposite sides of the body forwardly of the rear end thereof, the closed intermediate portion of the strap being spaced a predetermined fixed distance from the free ends of the strap and arranged to extend above the body a spaced distance above the heel ledge of a ski boot, and

(2) an elongated heel clip connected pivotally intermediate its ends to the closed intermediate portion of the strap for pivotal movement on an axis substantially parallel to the pivot axis of the free ends of the strap,

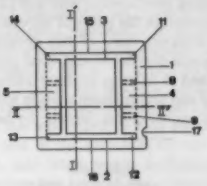
(3) one end of the heel clip being arranged to extend into the space between the free ends of the strap and the closed intermediate portion thereof for releasable abutment with the upper surface of the heel ledge of a ski boot,

(4) the pivot connection of the heel clip to the closed intermediate portion of the strap being selected to allow the said one end of the heel clip to be placed in abutment with the upper surface of the heel ledge of a ski boot and the heel clip rotated forwardly about said one end as a pivot axis until the plane of the strap moves forwardly across said one end pivot axis to releasably clamp the heel clip to the back of a ski boot.

4,461,105
FRAME FOR TRANSPARENCIES

Claude Thebault, Meylan, France, assignor to Kis France, Grenoble, France

Filed Apr. 8, 1982, Ser. No. 366,706
Claims priority, application France, Apr. 15, 1981, 81 07736
Int. Cl.³ A47G 1/06; G09F 1/12
U.S. Cl. 40—152 6 Claims



1. A single-piece, rigid plastic transparency frame for framing a segment of film, said frame having a front face and a rear face and comprising:

a central opening in the form of a window, the width and length of which on the front face are greater than the useful length and width of the film to be inserted; and on the rear face are less than said length and width; two horizontal grooves adapted to receive a film, said horizontal grooves comprising ends which form abutments for a film to be placed therein, said horizontal grooves being positioned along the longitudinal axis of a film such that the distance between the ends of the two opposite horizontal grooves is at least equal to the overall width of the film to be inserted, said grooves further comprising means for retaining said film therein;

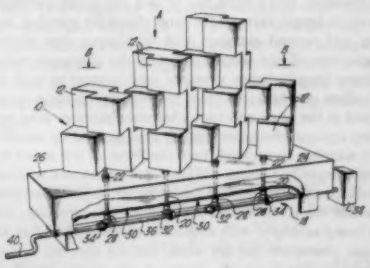
two narrow sides located on said front face bordering the window opening having a plurality of parallel slots extending therefrom which open into said horizontal grooves provided in the longitudinal edges of said window opening;

whereby a film may be inserted into said frame in a direction parallel to said longitudinal axis of said film by passing the film across one of said narrow sides through two of said parallel slots into said horizontal grooves.

4,461,106
INTERMESHED AND INTERLEAVED DYNAMIC DISPLAY UNITS

David A. Lawson, Woodreed Farmhouse, Stonehurst La., Five Ashes, nr. Mayfield, East Sussex, England

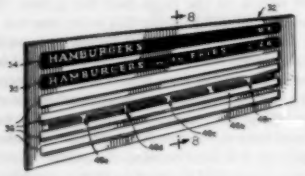
Filed May 7, 1982, Ser. No. 376,081
Claims priority, application United Kingdom, May 19, 1981, 8115277
Int. Cl.³ G09F 11/02
U.S. Cl. 40—505 10 Claims



1. A dynamic display comprising a multiplicity of presenta-

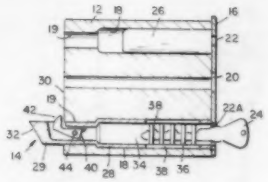
tion units arranged for rotation as at least two groups about respective parallel axes, at least one of the groups being contra rotatable with respect to at least one of the groups adjacent thereto, each of the groups including a plurality of presentation units in different levels and a plurality of presentation units in the same level, all of the presentation units being offset from adjacent presentation units considered both longitudinally and circumferentially of each of the groups, and each of the presentation units avoiding interference with any of the other presentation units, even though the paths of movement of the presentation units of adjacent ones of the groups overlap, when viewed in a direction parallel to said axes, presentation units in adjacent groups and in different levels avoiding interference by being interleaved and presentation units in adjacent groups and in the same level avoiding interference by being intermeshed.

4,461,107
MENU BOARD
Anton J. Grate, 3211 Burr Oaks Rd., Joliet, Ill. 60435
Continuation-in-part of Ser. No. 297,231, Aug. 28, 1981. This application Aug. 26, 1982, Ser. No. 412,029
Int. Cl.³ G09F *13/04*
U.S. Cl. 40—576 **6 Claims**



1. A menu board comprising, in combination, a generally flat board member provided with a window-like opening, sleeve means associated with said board arranged along the lateral edges of said opening defining a flat sleeve generally coextensive with and behind said opening, a plurality of flat, planar character members disposed in said board sleeve and visible from the front of the menu board through the opening, means for securing the character members to the menu board at selected positions within the opening, said securing means including at one end of each character member an appendage engageable with a portion of said sleeve means to thereby locate and lock the character members in the position selected within the opening, each of said character members being transparent except for an opaque character display area at the end thereof opposite said appendage, a first one of said character members being coextensive in length with the board opening and having its opaque area located at one end of said opening, a second one of said character members being shorter in length than said first character member and overlying said first member with its opaque area abutting the opaque area of said first member, and a third one of said character members being shorter in length than said second character member and overlying said second member with its opaque area abutting the opaque area of said second member, the character members of different lengths being arranged with respect to each other so that when overlaid one upon the other with their appendages aligned at the same end each character member does not overlie any opaque character display area carried by another character member as viewed from the front of the menu board to thereby equally present the character members without glare or reflection whereby the necessity for a glare reducing face panel for the menu board is obviated, the character members thus being arranged with respect to each other so that all of the opaque character display areas carried thereon are simultaneously visible from the front of the menu board without diminishment of clarity or intensity of the display areas due to overlapping layers of the character members, with said character display areas cooperating with one another to depict a single item of menu board information.

4,461,108
REVOLVER SAFETY LOCK
Francis Von Muller, 153 State St., Brooklyn, N.Y. 11201
Filed Dec. 24, 1981, Ser. No. 334,138
Int. Cl.³ F41C *17/08, 27/00*
U.S. Cl. 42—1 LP **12 Claims**



1. A safety lock device for use with a firearm having a rotatable cylinder, including a plurality of cylinder chambers each cylinder chamber including a cartridge chamber portion and a bullet opening portion, the cylinder having a front face having bullet opening apertures and a rear face having cartridge chamber apertures,

a tubular member adapted for insertion into a cylinder chamber of said cylinder said tubular member including a first tubular portion disposable within said cartridge chamber portion and a second tubular portion disposable within said bullet opening portion, said first tubular portion including a front portion adapted to extend past said front face of said cylinder and having an opening coextensive with said first tubular portion,

a latch housed within said front portion of said first tubular portion, said latch including a front locking portion and a rear portion pivotably mounted with said tubular member, said latch being rotatably movable between locked and unlocked positions, wherein in said locked position said locking portion extends through said opening into a position adjoining said front face of said cylinder and wherein in said unlocked position said locking portion is withdrawn away from said front face of said cylinder into said first tubular portion,

locking means for moving said latch between said unlocked position and said locked position, and

stop means associated with said tubular means at said rear face of said cylinder for limiting movement of said tubular member into said cylinder chamber towards said front face,

whereby when said tubular member is inserted into said cylinder chamber, said latch is moved into the locking position upon activation of said locking means.

4,461,109
FIREARM WITH NOVEL BREECH PLUG AND BOLSTER ASSEMBLY
Julian Eguizabal, Canaries, Spain, assignor to Connecticut Valley Manufacturing, Inc., Haddam, Conn.
Filed Jun. 14, 1982, Ser. No. 388,025
Int. Cl.³ F41C *27/00*
U.S. Cl. 42—51 **17 Claims**

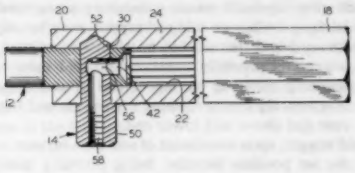
1. In a muzzle loading firearm adapted to fire a powder charge contained therein, the combination comprising:

(a) a barrel having a breech end, a muzzle end, and a bore extending longitudinally therethrough to define therein a generally annular barrel wall, said barrel adjacent said breech end having an aperture extending radially through said barrel wall and opening into said bore and a recess in

the inner surface of said barrel wall diametrically aligned with said aperture;

(b) an elongated breech plug having a body portion seated in and closing said breech end of said bore, said plug body portion extending within said bore from said breech end to beyond said aperture in said barrel wall, said plug body portion having a passage extending diametrically therethrough in alignment with said barrel wall aperture and recess, said plug also having a bore extending axially therein from its inner end and opening into said passage; and

(c) a bolster having an elongated cylindrical shank portion



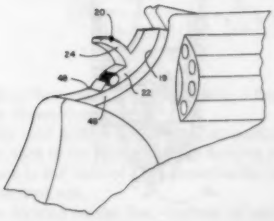
and a stem portion, said shank portion being seated in said barrel aperture, breech plug passage and barrel recess to retain said breech plug in place against biasing of said breech plug outwardly of said breech end of said barrel, said bolster also having a flash chamber formed in said shank portion and opening into said barrel bore through said bore in said breech plug, said flash chamber being adapted to receive a powder charge therein, and said bolster further having a flash transfer passage extending between said flash chamber and the exterior of said stem portion of said bolster to provide a path for transmission of a flash from the exterior of said barrel to said flash chamber.

4,461,110

SAFETY LATCH ARRANGEMENT FOR USE IN A FIREARM

Daniel T. Inderbitzen, 1801 Ashley Ct., Modesto, Calif. 95351, assignor to Daniel T. Inderbitzen, Modesto, Calif.

Filed Apr. 1, 1982, Ser. No. 364,399
Int. Cl.³ F41C *17/00*
U.S. Cl. 42—66 **6 Claims**



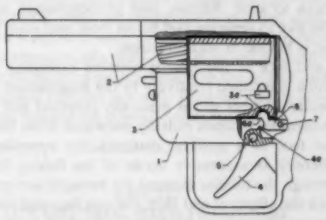
1. A safety latch arrangement for use in a firearm of the type including a cylinder adapted to contain a bullet having a primer, a main frame which is at least partially hollow and which provides an opening therein and into said cylinder, a trigger, a hammer including a hammer body carrying firing pin means at its front end and a thumb spur which is disposed behind the pin means and which extends upwardly and rearwardly therefrom above the base of the hammer body, and means for supporting said hammer in a spring loaded manner for pivotal movement rearwardly into and forwardly out of said frame opening about a pivot axis at the base of the hammer so as to cock the hammer in a rearward, recessed position in said frame such that the hammer can be released by way of the trigger, the falling of the hammer forcing the firing pin means through the frame opening and into the cylinder to make contact with the bullet's primer, said safety latch arrangement comprising latching means carried by said hammer body within a channel located within said hammer body between its base and thumb spur, behind the latter, for movement with the hammer as the latter pivots back and forth about said axis, said latching means being movable within said channel between a first position which cooperates with said main frame for preventing the hammer from rearwardly recessing into the frame through said opening and a second position which allows the hammer to rearwardly recess into the frame through said opening whereby to be moved to allow a cocked position and thereby capable of firing the firearm, said channel extending perpendicular to the movement of said hammer and opening outward behind and in the direction of said thumb spur for providing a slot, said latch means including a top segment which is made accessible by said slot, whereby an individual can readily manually move the latch member between its first and second positions.

4,461,111

REVOLVER TRIGGER SAFETY INTERLOCK

Shimon Waiser, 435 Ocean Pkwy., Apt. 5H, Brooklyn, N.Y. 11218

Filed Sep. 13, 1982, Ser. No. 417,420
Int. Cl.³ F41C *17/02*
U.S. Cl. 42—66 **2 Claims**



1. In a revolver having a frame, a barrel fixed in the frame, said barrel having a bore therein, a cylinder located in the frame, said cylinder having a plurality of circumferentially disposed cartridge-receiving chambers, a cylinder latch releasably engaging the cylinder to prevent rotation thereof, special recesses located in an external surface of the cylinder to be engaged by said cylinder latch, the improvement comprising a trigger safety interlock for preventing rotation of the trigger from its initial position when none of the circumferentially disposed cartridge-receiving chambers of the cylinder are axially aligned with the revolver bore, said safety interlock consisting of an engaging formation provided on said trigger and another engaging formation provided on said cylinder latch, said two engaging formations disposed one opposite another when said trigger is in its initial position and said engaging formation located on the cylinder latch engages the formation located on the trigger when the latter is in an initial position and the cylinder latch is out of said special recess in the external surface of the cylinder thus preventing rotation of the trigger.

4,461,112

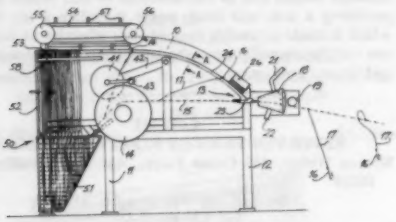
APPARATUS FOR USE IN FISHING

Kevin N. Jacobsen, Ellistrin Lodge, Roundstone, Ireland

Filed Oct. 5, 1981, Ser. No. 308,447
Int. Cl.³ A01K *91/00, 97/06*
U.S. Cl. 43—4 **15 Claims**

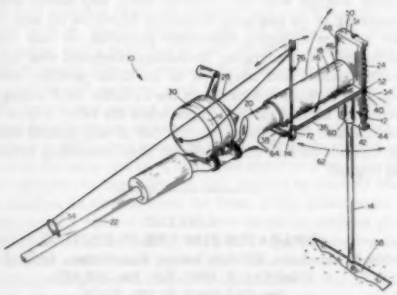
1. Apparatus for separating hooks of a fishing line of the type having a main line with said hooks spaced apart along said main line and connected thereto by snoods, comprising:

means for hauling said line in a predetermined direction;
a guide-member effective for encircling said line;
said guide-member including a tubular element having a longitudinal axis aligned with said direction;
an end face on said tubular element;
a slot in said tubular element having a length disposed generally in said direction in said guide-member;
a rail-member having an end disposed contiguous to said slot and said rail-member extending away from said slot at a predetermined angle to said direction;
said guide-member including means for permitting each of said hooks to be guided into and through said slot while its snood is drawn through said guide-member;
said rail-member including means for slideably engaging said



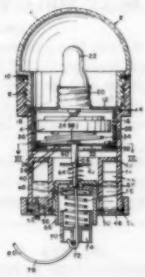
hooks as they pass from said slot and for permitting said hooks to slide thereon, said predetermined angle being effective to separate said hooks from said main line as said line is hauled in said direction;
said end face of the tubular element extending in a plane which is inclined relatively to the longitudinal axis of the tubular element and is generally elliptical and wherein a fin-member extends radially outwards from the elliptical end face at a position diametrically opposite the slot, whereby as successive hooks of the fishing line passing through the tubular element are brought into engagement with the elliptical end face, the end face and the fin-member are effective to guide the individual hooks in one or other circumferential direction around the end face, into engagement with the slot.

4,461,113
AUTOMATIC FISHHOOK SETTING APPARATUS
Charles W. Erwin, Omaha, Nebr., assignor to G. Gene Henthorn, Omaha, Nebr., a part interest
Filed Jul. 30, 1982, Ser. No. 403,711
Int. Cl.³ A01K *97/12*
U.S. Cl. 43—15 **6 Claims**



1. An automatic fish hook setting apparatus adapted for holding a fishing rod including a handle at one end, an eye on the opposite end, a reel adjacent said handle and a fish line extended from said reel through said eye and having a hook adjacent the free end thereof, said apparatus comprising,
a base,
an anchor post connected to said base and extended downwardly therefrom,
a fishing rod support member connected to the base for pivotal movement between a set position for supporting the rod in a generally forwardly extended position and a release position for supporting the rod in a generally upright position,
bias means for urging said rod support member to the release position therefor, and
coacting latch means on said base and pole support member,
said coacting latch means comprising an upwardly facing latching surface on said rod support member adjacent the forward end thereof and an elongated trigger having a lower end pivotally connected to said base, a fish line retaining means at the upper end of said trigger and a downwardly facing latching surface on said trigger adjacent and above said lower end,
said trigger, upon movement of said pole support member to the set position therefor, being pivotally movable to a position wherein said latching surfaces are engaged to releasably secure said pole support member in the set position therefor against the urging of said bias means, whereby upon training the fish line through said fish line retaining means, a forward pull on the line is operative to pivot said trigger forwardly clear of said rod support member whereby said bias means is operative to pivot said rod support member upwardly to set the hook in a fish's mouth,
said base and said pole support member, in the set position therefor, each including vertically spaced-apart rearwardly extended flanges, said bias means being connected to and extended between said flanges.

4,461,114
FISHING FLOAT
John T. Riead, Rte. 2, Box 25, Cameron, Mo. 64429
Filed Jun. 28, 1982, Ser. No. 392,888
Int. Cl.³ A01K *93/00*
U.S. Cl. 43—17.5 **3 Claims**



1. A fishing float comprising:
a. a hollow, buoyant body member adapted to float at a water surface,
b. means operable to affix an intermediate point of a fishing line to said body member, whereby to provide a leader portion of said line depending from said body member through the water to fishhooks, baits, lures, sinkers or the like attached to its lower end,
c. a lamp bulb mounted in said body member, and visible when lighted through a transparent portion of said body member,
d. an operative electrical circuit for said lamp bulb including

said bulb, a power source and a normally open electric switch, both mounted in said body member,

e. means operable by increased tension on said leader to close said switch to actuate said bulb, and

f. means whereby the degree of increased leader tension required to close said switch may be adjusted, said electrical switch comprising a fixed switch member carried by said body member, a resilient switch member having a portion thereof fixed in said body member and a portion thereof deflectable toward said fixed switch member by said switch operating means, responsively to added tension of the leader portion of said fishing line, and an insulating spacer disposed between and preventing contact between fixed portions of said switch members, the thickness of said spacer also setting the normal spacing between said fixed switch member and the deflectable portion of said resilient switch member, said spacer being interchangeable with other spacers of different thickness, whereby to change the sensitivity of said switch to increases in the leader pull.

4,461,115

FISHING FLOAT

Ruben S. Carrillo, 828 N. Neptune Ave., Wilmington, Calif. 90744

Filed Mar. 22, 1982, Ser. No. 360,316
Int. Cl.³ A01K *93/00*
U.S. Cl. 43—43.13 **4 Claims**

1. A fishing float capable of maintaining a fixed position in the moving stream comprising:

a floatable disc with a hollow central portion adapted to remain open to the stream thereby forming a torus shaped structure in the form of a life preserver having a first side and a second side,

a first fin located on the first diameter of said disc and attached to said first side,

a second fin located on a second diameter of said disc that is orthogonal with said first fin and attached to said second side,

a first line-connecting point adapted to be connected to a fishing line and attached to the periphery of said disc and located on a third diameter, and

a second line-connecting point adapted to be connected to a fishing line and attached to the periphery of said disc and located on a fourth diameter,

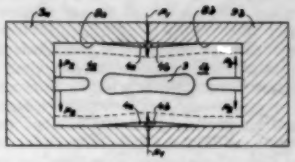
said third and fourth diameter being orthogonal with respect to each other and located on the disc whereby each of said diameters are 45 degrees from each other.

4,461,116

CONNECTING MEMBER

Erik Bach, Billund, Denmark, assignor to Interlego A.G., Baar, Switzerland

Filed Sep. 8, 1982, Ser. No. 416,054
Claims priority, application Denmark, Sep. 14, 1981, 4078/81
Int. Cl.³ A63H *33/10*
U.S. Cl. 446—128 **2 Claims**



1. A connecting member for interconnecting a pair of components in a building set, said member comprising:

a tubular plug having a cylindrical outer surface made of an elastically deformable material;

a pair of lenghtwise slits extending from each end of said plug along a first axial plane;

a pair of opposed, lenghtwise extending apertures disposed in said first plane in the middle portion of the plug;

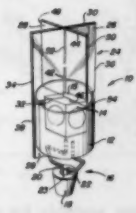
two pairs of opposed wedges disposed on said plug cylindrical outer surface, said wedges extending lenghtwise along a second axial plane perpendicular to said first axial plane, the two wedges of each pair being disposed symetrically on opposite sides of a third plane disposed generally in the middle of the plug perpendicular to the axis of said plug, said wedges tapering inwardly from the middle portion of the plug toward the opposite ends thereof.

4,461,117

TOY GRENADE WITH FLASHCUBE

Richard J. Gott, Rte. 2, Box 193-B, Seaford, Del. 19973

Filed Apr. 22, 1982, Ser. No. 371,001
Int. Cl.³ A63H *33/26*
U.S. Cl. 446—473 **11 Claims**



1. A light-emitting toy, said toy comprising:

a body section;

light-emitting means for producing a "flash" visually simulative of an explosion associated with said body section and having activating contact means;

means engageable with said contact means operatively connected to said body section and serving to activate said light-emitting means in response to the toy being thrown and impacting in a manner simulative of a grenade so as to actuate said means engageable with said contact means to cause an emission of light from said light-emitting means visually simulative of a grenade explosion,

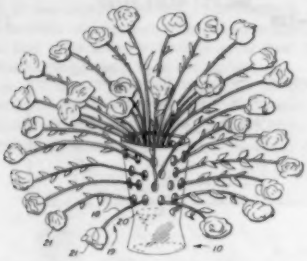
said light-emitting means comprising a camera flashbulb.

4,461,118

FLOWER ARRANGING VASE

Jilma Fertig, 12 E. 31st St., Apt. 1102, New York, N.Y. 10016

Filed Sep. 4, 1981, Ser. No. 299,596
Int. Cl.³ A01G *5/04*
U.S. Cl. 47—41 R **1 Claim**



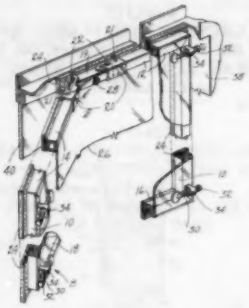
1. A flower arranging vase, comprising in combination, a vessel including a bottom and side wall around a central compartment for containing fresh water, a plurality of holes through an upper portion of said wall for cut flowers to extend therethrough, and loop pile material lining the interior surface of the bottom of at least some of said plurality of holes whereby stems of said cut flowers are prevented from sliding out of said holes by said loop pile.

4,461,119

PICTURE WINDOW STORM WINDOW

Samuel C. Smith, 210 Hartman Rd., Newton Centre, Mass. 02159

Filed Sep. 23, 1982, Ser. No. 422,151
Int. Cl.³ E01F *13/00*
U.S. Cl. 49—34 **4 Claims**



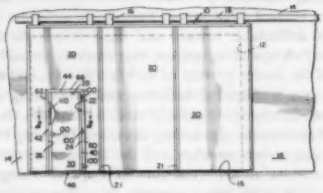
1. A storm window assembly for an elongated window comprising a foldable frame including a pair of spaced-apart intermediate frame members, extending along the length of the frame, a pair of generally C-shaped rigid frame end sections each hingedly connected at its ends to the ends of the intermediate frame members, a flexible unitary transparent plastic sheet secured continuously at its end portions to each of the frame sections along most of their lengths leaving the generally centrally located margin of the sheet adjacent the frame sections free of the frame sections and means securing a limited central portion of the sheet to the intermediate members near their mid-points but leaving the remainder of the margin of the sheet free of the intermediate member, whereby the sheet is stretched taut longitudinally when the assembly is installed and curved about a relatively large radius as the sections are folded closer together.

4,461,120

PASS DOOR ASSEMBLY

Gene A. Hemmerling, Richmond, Ind., assignor to American Metal Door Company, Inc., Richmond, Ind.

Filed Jun. 8, 1983, Ser. No. 502,334
Int. Cl.³ E05D *15/48*
U.S. Cl. 49—169 **7 Claims**



1. A door for selectively covering an opening in a wall, the door comprising: at least one primary door panel movable to substantially cover the wall opening, the door panel having a rear surface to face the wall, an opposing front surface, and a pass opening therethrough to permit passage through the primary door panel, a frame bordering the pass opening, the frame including a lock jamb having an offset door stop and a hinge jamb, a pass door for substantially covering the pass opening, the pass door having a rear surface, a front surface, a first side edge, and a second side edge, means for pivotally attaching the first side edge of the pass door to the hinge jamb to permit the pass door to swing from an open position to a substantially closed position against the offset door stop of the lock jamb, and means for limiting lateral movement of the second side edge of the closed pass door relative to the lock jamb, the limiting means including a pin, the pin having a proximal portion fixed to the offset door stop of the lock jamb and a distal portion extending substantially perpendicular to the offset door stop for engaging the pass door when the pass door is in the closed position and latch means for engaging the lock jamb to retain the pass door in its closed position.

4,461,121

PROGRAM-CONTROLLED GRINDING MACHINE, PARTICULARLY FOR SHARPENING OF ROTATABLE CUTTING TOOLS

Willi Motzer, Tübingen, and Horst Bräuning, Wankheim, both of Fed. Rep. of Germany, assignors to Montanwerke Walter GmbH, Tübingen, Fed. Rep. of Germany

Filed May 28, 1982, Ser. No. 382,929
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1981, 3133488
Int. Cl.³ B24B *3/06*
U.S. Cl. 51—3 **12 Claims**

1. Program-controlled machine tool grinding machine, particularly for the manufacture and sharpening of rotatable cutting tools (**13**; **50**) such as boring tools, drills, milling cutters, and the like,

having a frame (**1**);

a grinding head (**21**) mounted on the frame and vertically adjustable about a first vertical axis (B), as well as rotatable with respect thereto,

said grinding head including

a first grinding spindle;

a workpiece carrier (**5**, **6**, **7**) to carry a cutting tool (**13**, **50**) to be manufactured or sharpened, including

a rotary tool receiving spindle (**7**) rotatable about a horizontal axis (A);

turret means (**3**) mounting said workpiece carrier for rotary adjustment about a second vertical axis (C) parallel to said first vertical axis (B);

cross slide means (**2**, **19**) on said frame and providing for support and relative movement of said turret means (**3**)

and said grinding head (21) in two horizontal transverse directions (X, Z);

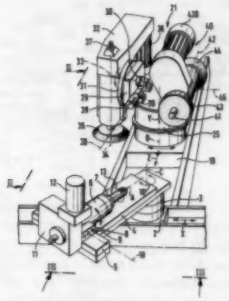
control means (47) connected to and controlling

(a) the respective movements of the grinding head with respect to longitudinal direction, as well as rotation with respect to said axes; and

(b) rotation of the tool receiving spindle (7),

wherein, in accordance with the invention,

at least two separately driven grinding spindles (37, 41) are



provided, at least one (41) of said spindles having an axis of rotation (42) located in a horizontal plane (X-Z),

and at least three separate grinding wheels (35, 43, 44) are provided, secured to the at least two separate grinding spindles,

said control means (47) sequentially controlling engagement of said grinding wheels, one after the other, and controlling the orientation of the workpiece tool (7, 50) with respect to the selected grinding wheel then in grinding engagement with said workpiece tool.

4,461,122

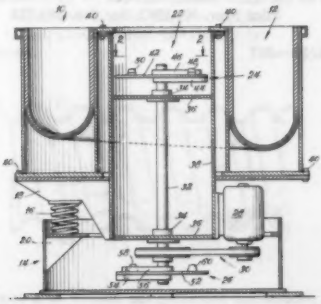
FINISHING APPARATUS WITH AUTOMATICALLY-VARIABLE VIBROGYRATORY INTENSITY AND/OR DIRECTION

Gunther W. Balz, Kalamazoo, Mich., assignor to Roto-Finish Company, Inc., Kalamazoo, Mich.

Filed Aug. 3, 1981, Ser. No. 289,295

Int. Cl.³ B24B *31/00*

U.S. Cl. 51—163.2 **38 Claims**



1. In a finishing machine for finishing the surface of unfinished parts with finishing media, comprising a generally annular finishing chamber for receiving unfinished parts and finishing media and for finishing parts therein, said finishing chamber comprising a bottom and upstanding side walls, vibratory means for vibration of said finishing chamber centrally located with respect to said finishing chamber, said vibratory means comprising a substantially vertical shaft having top and bottom eccentric weights, one or more of which eccentric weights being free for movement with respect to said shaft, means operatively associated with any said movable weight for effecting movement of any said movable weight within limits, and limit means limiting the extent of movement of any said moveable eccentric weight, the improvement characterized in that said vibratory means comprises dissimilar, i.e., major and minor, eccentric weights at each end of said shaft, one of said eccentric weights at each end of said shaft being fixed with respect to said shaft, the other of said eccentric weights at each end of said shaft being freely moveable with respect to said shaft and freely moveable into substantial coincidence with said fixed eccentric weight at the same end of said shaft and out of coincidence with said fixed eccentric weight at the same end of said shaft, and said limit means defining the degree of permissible movement of said freely moveable eccentric weight at each end of said shaft with respect to said shaft and with respect to said fixed eccentric weight at the same end of said shaft, for respectively (a) varying the intensity of vibrations imparted by said vibratory means, or (b) reversing the direction of the force factor imparted by said vibratory means and hence the direction of flow of mass within said finishing chamber concurrently with a variation in the intensity of vibrations imparted by said vibratory means, wherein said two of said fixed eccentric weights at opposite ends of said shaft are between about 45 and 135 degrees out of phase with each other and wherein said limit means comprises limit means defining a position wherein said moveable weights are up to approximately 180 degrees opposed to said fixed weights.

4,461,123

LONG-TRAVEL ANNULAR VIBRATORY BARREL FINISHING APPARATUS FOR LINE-PROCESSING

Hisamine Kobayashi, Nagoya, Japan, assignor to Kabushiki Kaisha Shikishima Chipton, Nagoya, Japan

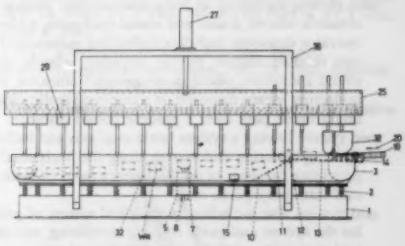
Division of Ser. No. 137,441, Apr. 4, 1980, Pat. No. 4,317,313.

This application Dec. 30, 1981, Ser. No. 335,666

Claims priority, application Japan, Apr. 9, 1979, 54-42881; Mar. 5, 1980, 55-27800

Int. Cl.³ B24B *31/00*

U.S. Cl. 51—163.2 **4 Claims**



1. A long travel vibratory barrel finishing apparatus for line processing of workpieces to be finished, said vibratory finishing apparatus comprising:

an elongated vibratory barrel having two opposed semi-circular barrel outer wall segments and straight barrel outer wall segments extending therebetween to form the elongated barrel, said barrel having a length from 5 to 15 times the width in the direction transverse to the straight barrel outer wall segments, and said barrel having a cross-section transverse to the length thereof which is symmetrical about the center of the cross-section;

a plurality of springs supporting the bottom of said vibratory barrel and extending along the bottom of the barrel in a line generally parallel to the axis of the circular cross-sectional portions;

a single vibrator at the center of said barrel and having

vertical rotary shaft and having unbalancing weights on the upper and lower ends of said rotary shaft at a predetermined angle to each other around the axis of the shaft for producing a predetermined vibration force during rotation of said shaft;

guide means positioned above said vibratory barrel and extending around the entire circumference of said barrel;

a plurality of control plate shafts depending from said guide means into said vibratory barrel and having workpiece advancing and controlling plates on the lower ends thereof within said vibratory barrel; and

shaft drive means connected to said control plate shafts for moving said control plate shafts in a workpiece advancing direction around the entire circumference of said barrel along said guide means.

4,461,124

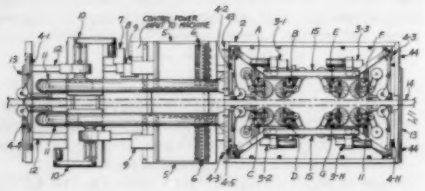
AUTOMATIC OR MANUAL FOUR-AXES SANDING MACHINE SYSTEM FOR SANDING AND/OR FINISHING A VERTICALLY HELD CONTOURED PART

David A. Anderson, Sumner, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Feb. 26, 1982, Ser. No. 352,729

Int. Cl.³ B24B *51/00*

U.S. Cl. 51—165 R **8 Claims**



1. A manually controlled system for finishing vertically being rolled, machined, or blasted stationary parts of varying length, width, height, with varying contours by means of abrasive wheels:

said system including at least one sanding station having abrasive wheels, a dust and sound enclosure, a plurality of operator consoles, and dust collecting means, said at least one sanding station having abrasive wheels, dust and sound enclosure, plurality of operator consoles, and dust collecting means disposed on a common trolley for travelling a linear path over a predetermined distance;

said system having a system horizontal axis and including an opening bisecting said system along the horizontal axis for providing finishing of said stationary parts on both sides of said stationary parts; and,

said system also including mechanical means of propulsion for the system and guide rolls for stabilizing, and directing said stationary parts by said abrasive wheels.

4,461,125

CONTROL CIRCUIT FOR AN APPARATUS FOR ADJUSTING AND DRESSING A GRINDING WHEEL

Ulrich Wuest, Adliswil, Switzerland, assignor to Maag Gear-Wheel & Machine Company Limited, Zürich, Switzerland

Filed Jul. 20, 1981, Ser. No. 284,971

Claims priority, application Switzerland, Jul. 31, 1980, 5835/80

Int. Cl.³ B24B *53/00*

U.S. Cl. 51—165.88 **12 Claims**

1. A control circuit for an apparatus for adjusting and dressing a grinding wheel, comprising:

a feeler having a first end which can be periodically brought into contact with a grinding wheel;

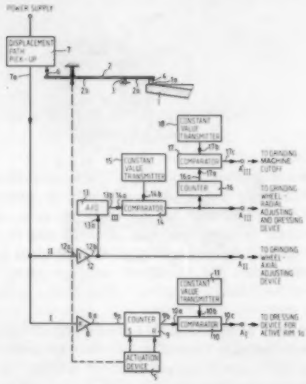
said feeler being arranged to move in response to surface roughness of the grinding wheel while said first end is in contact therewith;

said feeler having a second end;

means for operatively connecting the second end of the feeler with the control circuit;

a displacement path transmitter upon which the opposite end of said feeler acts by means of said operatively connecting means;

said displacement path transmitter having an output for delivering thereat putput singals proportional to the feeler



movements due to the condition of the grinding wheel in order to initiate, whenever necessary, a dressing operation;

at least one circuit branch for evaluating and processing said output signals of said displacement path transmitter in order to initiate, when necessary, a dressing operation; and

said displacement path transmitter having said output connected with said at least one circuit branch for delivering said putput signals thereto.

4,461,126

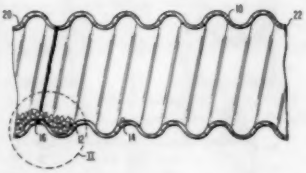
CLEANING PROCESS FOR CORRUGATED ALUMINUM ELECTRICAL TRANSMISSION LINE ENCLOSURE

Gary K. Bowman, Westborough, Mass., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 30, 1982, Ser. No. 363,756

Int. Cl.³ B24B *1/00*

U.S. Cl. 51—313 **3 Claims**



1. A process for preparing the interior of a spirally-corrugated sheath comprising the steps of:

placing a predetermined amount of a tumbling abrasive material in one end of said sheath;

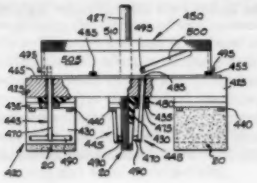
rotating said sheath in the direction of said spiral corrugations until said tumbling abrasive material traverses from said one end of said sheath to the other end of said sheath; and then

rotating said sheath in the reverse direction.

4,461,127
ABRADING TOOL

Randolph T. Hanger, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 323,017, Nov. 19, 1981. This application Jan. 18, 1982, Ser. No. 340,130
Int. Cl.³ B24D *13/04*
U.S. Cl. 51—330 9 Claims



1. An abrading tool, comprising:

a rotatable support having at least one bore,

at least one abrasive member carried by said support,

means for applying a biasing force upon said abrasive member to urge said abrasive member towards a position which is substantially perpendicular to said support, said biasing means having a recess;

a passageway extending through said biasing means, said passageway being coaxially aligned with said bore;

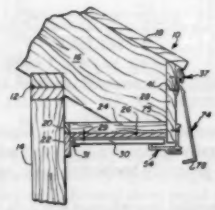
means for adjusting the force of said biasing means, said adjusting means comprising an elongated member having a transverse member capable of abuttingly contacting said biasing means along its length, said elongated member being translatable within said passageway and said bore, and

means for constraining said elongated member, said constraining means comprising a releasable flexible latch spring disposed in said recess, said latch spring being capable of engaging said elongated member, whereby when said latch spring is released said elongated member may translate within said passageway and said bore to position said transverse member at different locations along said biasing means to vary the biasing force imposed on said abrasive member.

4,461,128
SOFFIT AND FASCIA CONSTRUCTION

Emmerich Knoebl, 22 W. 421 Army Trail, Addison, Ill. 60101

Filed Jul. 8, 1981, Ser. No. 281,488
Int. Cl.³ E04D *13/15;* E04B *1/00*
U.S. Cl. 52—94 17 Claims



1. An improved siding construction for covering a soffit and a fascia of a cornice located beneath a portion of a roof immediately adjacent the upper end of said fascia and projecting outwardly of a wall of a structure immediately adjacent the inner end of said soffit comprising:

a pair of panels including a soffit panel adapted to be affixed beneath said soffit and including an inner edge portion and an outer free edge portion, and a fascia panel adapted to be affixed to said fascia and including an upper edge portion and a lower free edge portion;

a first inner channel adapted to be affixed to said structure immediately adjacent to the inner end of said soffit and the wall, opening away from said wall, for receiving the inner edge portion of said soffit panel therein;

a second upper channel adapted to be affixed to said structure immediately adjacent to the upper end of the fascia and the roof portion, opening away from said roof portion, for receiving said upper edge portion of said fascia panel therein; and

a corner member including a generally vertically disposed outer leg having an upper first edge portion and a bottom portion, and a lower leg integral with said bottom portion and defining a corner therewith and extending therefrom generally inwardly of said cornice and including an inner second edge portion, and a lock leg depending from one of said legs intermediate of said first and second edge portions and said corner;

said lock leg defining a lock slot with one of said outer and lower legs, said corner member being adapted to be affixed to said cornice adjacent the junction of said fascia and said soffit for engaging and retaining in place the free edge portion of one of said panels, said lock slot adapted to interlock with and lockingly retain therein the free edge portion of the other said panels.

4,461,129
METHOD AND MEANS FOR REDUCING THE HEAT CONSUMPTION IN A BUILDING OR THE LIKE

Magnus H. B. von Platen, Sjödiken 19, S-233 00 Svedala, Sweden

PCT No. PCT/SE81/00010, 371 Date Sep. 21, 1981, 102(e) Date Sep. 21, 1981, PCT Pub. No. WO81/02176, PCT Pub. Date Aug. 6, 1981
PCT Filed Jan. 19, 1981, Ser. No. 305,635
Claims priority, application Sweden, Jan. 22, 1980, 8000488
Int. Cl.³ E04H *14/00*
U.S. Cl. 52—173 R 12 Claims

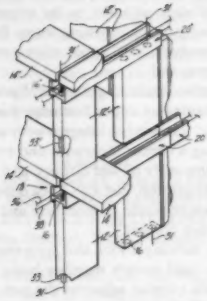
1. A method of reducing the heat consumption in a building or the like, comprising the steps of providing a plurality of spaced, substantially parallel, air permeable screen means on an external surface of the building or the like substantially transversely to the dominant direction of the free winds along said surface said projecting freely therefrom with a free space between adjacent screen means, said screen means each being constructed for providing a reduction in wind speed passing therethrough of from about 40% to about 60%.

4,461,130

BUILDING CONSTRUCTION USING HOLLOW CORE WALL SLABS

Calvin Shubow, 30995 Hunter's Dr., Farmington, Mich. 48024

Filed May 29, 1981, Ser. No. 268,598
Int. Cl.³ E04H *1/00*
U.S. Cl. 52—236.8 **3 Claims**



1. In a building construction employing precast concrete slabs having generally parallel core channels extending therethrough from one edge to an opposed edge between opposite faces thereof, the improvement comprising:

a plurality of wall members, each wall member being one of said precast concrete slabs and arranged so that the core channels extend vertically;

a plurality of horizontally extending generally H-shaped precast concrete lintel beams on the top edge of said wall members, said lintel beams each having an upwardly extending trough, a horizontally extending web portion with at least one opening extending vertically therethrough, and a pair of downwardly extending flanges, each lintel beam being arranged so that the top edge of at least one wall member is received between said flanges and said opening is aligned with a selected core channel, at least one horizontally extending reinforcement rod passing within the trough of said lintel beam and encompassed by concrete;

at least one vertically extending reinforcement rod passing through the selected core in the wall member and opening in the lintel beam;

a poured concrete section in the selected core and lintel beam opening surrounding said vertical reinforcement rod; and

a floor made of a plurality of precast concrete slab members, each floor member having end faces resting on the upper surfaces of the lintel beams, with edges of the foor members being spaced from a vertical extension of said vertical reinforcement rod whereby said vertical reinforcement rod may be inserted into a selected core of a similarly constructed wall member for an upper story.

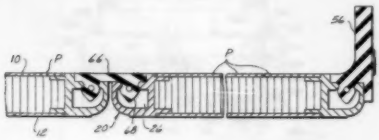
4,461,131

PANEL INTERCONNECTION SYSTEM

Mark A. Pressell, Cadillac, Mich., assignor to AAR Corporation, Del.

Filed May 21, 1982, Ser. No. 380,623
Int. Cl.³ E04F *15/14*
U.S. Cl. 52—395 **22 Claims**

1. A floor construction comprising an assembly of rectangular panels having spaced upper and lower sheets of substantial thickness, means connecting and sealing adjacent edges of panels comprising individual rigid fittings for attachment to the adjacent edges of adjacent panels, and connector and sealing strips connecting adjacent fittings, each fitting comprising an inner vertical wall having a height equal to the thickness of the panels, and upper and lower flanges extending laterally from one side of said fitting into the space between edge portions of said sheets, said flanges being spaced vertically from the top and bottom edges of said wall by the thickness of said sheets to cause the outer surfaces of said sheets to be co-planar with the upper and lower edges of said wall, said fitting having an upwardly open channel at the outer side of said inner wall, the outer wall of said channel having its upper edge spaced below the plane of said floor, longitudinally and inwardly extending confronting locking ribs on said walls, the upper surface on the locking rib on said inner wall being co-planar



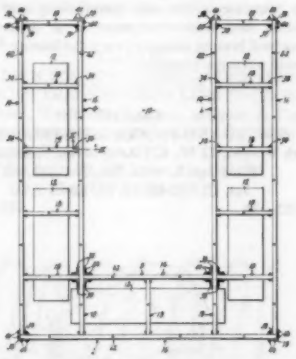
with the upper edge of said outer wall, said sealing and connecting strip having a thickness equal to the spacing of the upper surface of the rib on said inner wall and the upper edge of said outer wall to cause said strip to have its upper surface co-planar with the floor, said strip having spaced parallel downwardly extending lugs received in the channels of adjacent fittings, said lugs having laterally and longitudinally extending lobes defining grooves in which said ribs are received, said strip being formed of a yieldable resilient material to provide for pressing said lugs downwardly into said channel.

4,461,132

SUB-STRUCTURE FOR BOAT DOCKS

Richard O. Schmidt, Prairie Village, and Ace E. King, Leawood, both of Kans., assignors to Steel-N-Foam Docks, Inc., Kansas City, Kans.

Filed Feb. 26, 1981, Ser. No. 238,220
Int. Cl.³ E04C *2/38*
U.S. Cl. 52—656 **1 Claim**



1. A sub-structure for boat docks comprising an elongated frame of generally ladder-like form and adapted to be float-supported in a generally horizontal plane, said frame comprising:

a. a pair of parallel, spaced apart side bars formed of resilient sheet metal, said side bars being of C-channel form in cross-sectional contour and opening toward each other, each having a vertical main web, horizontal flanges at the upper and lower edges of said main web, and an inturned vertical lip at the free edge of each of said flanges, whereby to be relatively highly resistant to bending flexure but relatively less resistant to torsional strain,

b. a series of cross bars extending between said side bars in

parallel, spaced apart relation, each of said cross bars being of a C-shaped channel form the same as that of said side bars, with its open side facing horizontally,

c. means connecting each end of each of said cross bars to its associated side bar and comprising a vertically extending metal channel closing the end portion of the hollow cross-sectional contour of the cross bar, having a base web disposed flush with the end of the cross bar, normal to the general extent thereof, and abutting the lips of the associated side bar, and a pair of spaced apart parallel flanges abutting respectively the main web and lips of said cross bar, means affixing the flanges of said connector channel respectively to the main web and lips of said cross bar, and a single horizontal bolt affixing the base web of said connector channel to each of the lips of said side bar, said bolts being disposed at the vertical midline of said base web portion, and

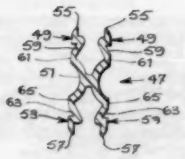
d. means connecting said side bars to resist relative longitudinal movement thereof strongly, whereby to maintain the generally rectangular form of said frame.

4,461,133

STRUCTURAL MEMBERS MODULES

Francois X. Laroche, Rte. du Mont Shefford, P.O. Box 1024, Waterloo, Quebec, Canada J0E 2N0

Filed Jan. 29, 1982, Ser. No. 343,844
Claims priority, application Canada, Oct. 7, 1981, 387506
Int. Cl.³ E04C *2/40*
U.S. Cl. 52—730 **15 Claims**



1. A structural building unit comprising a bar-shaped member having two wide sides, a central section, two narrow sides and two edge sections formed adjacent said narrow sides, respectively, first connecting means comprising a pair of spaced-apart arms projecting transversely from one of said wide sides of the member and forming a slot therebetween, and second connecting means in each edge section, each of said second connecting means comprising first and second grooves, said grooves being identical in shape and aligned in one edge section close to the adjacent narrow side, said first groove extending into said one edge section from said one wide side toward said second groove, and said second groove, being opposite the first groove, and extending into said one edge section from the other wide side of the member toward said first groove.

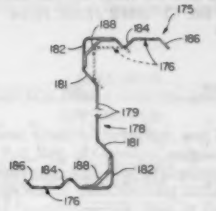
4,461,134

SHEET METAL BEAM

Colin F. Lowe, 5214 Sanford, Houston, Tex. 77035

Filed Jul. 6, 1981, Ser. No. 280,803
Int. Cl.³ E04C *3/30*
U.S. Cl. 52—732 **16 Claims**

1. An elongated beam adapted for use in constructing a building and having a substantially high strength/weight ratio, said beam comprising a roll-formed sheet metal panel forming a web section integrally connecting upper and lower flange sections, said web section having upper and lower inclined web portions sloping in opposite directions from a generally vertical intermediate web portion integrally connecting said inclined web portions, said web section further including upper and lower generally vertical web portions horizontally offset and integrally connecting the corresponding said inclined web portions to the corresponding said flange sections, said upper and lower flange sections being disposed in vertical overlapping relation and projecting laterally in opposite directions from the corresponding said upper and lower generally vertical web portions for providing said beam with a generally Z-shaped cross-sectional configuration to facilitate stacking a



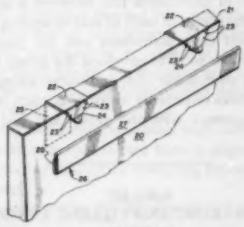
plurality of said beams in interfitting nested relation, and means for stiffening said upper and lower flange sections relative to said web section while providing for stacking a plurality of said beams in said interfitting nested relation during storage and shipping.

4,461,135

WALLBOARD TRIM APPARATUS

Dallas A. Anderson, 541 Manor Dr. NE., Spring Lake Park, Minn. 55432, and Harlan J. Grayden, 2764 Churchill St., Roseville, Mina. 55113, assignors to Michael W. Ognanovich; Dallas A. Anderson; Milfred A. Langseth and Harlan J. Grayden, all of New Brighton, Minn.

Filed Nov. 2, 1981, Ser. No. 317,451
Int. Cl.³ E04C *2/38*; E06B *1/04*
U.S. Cl. 52—827 **3 Claims**



1. Apparatus for supporting an edge-finishing strip along an edge of partition-forming sheets of wallboard which comprises:

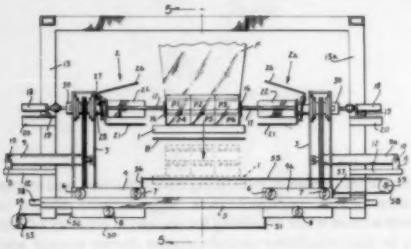
a plurality of clip means for engaging said wallboard along its edge in spaced relation to each other, said clip means being supported in close contour snug fitting relationship to said wallboard without fasteners including a plurality of tooth means extending outwardly and away from said wallboard for engaging a portion of a cooperating finishing strip means; and

elongated finishing strip means having front facing trim means for obscuring the edge, and including flange means doubled behind itself and extending for a substantial portion along its width and insertable between said clip means and said wallboard for supporting said trim means in obscuring relation to the edge, and having a length generally co-extensive with and in opposing relation to, said trim means, said teeth of said clip means engaging said finishing strip means to guard against disengagement with said clip means.

4,461,136
METHOD AND APPARATUS FOR ENVELOPING A PLURALITY OF ITEMS IN A STRETCHABLE FILM

Doyle R. Hudson, and Jimmie O. Dulaney, both of West Monroe, La., assignors to Quachita Machine Works, Inc., West Monroe, La.

Filed Dec. 30, 1981, Ser. No. 335,734
Int. Cl.[3] B65B *11/04, 13/04*
U.S. Cl. 53—399 23 Claims

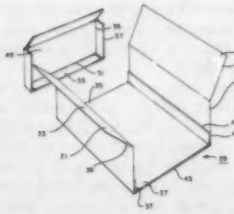


1. A method of enveloping a plurality of items in a stretchable film comprising the steps of providing a pair of laterally spaced and opposed wrapping cage assemblies each having a plurality of platens projecting inwardly toward the other assembly with the platens of each assembly defining therebetween part of a space for receiving a composite group of items, feeding a web of stretchable film between said cage assemblies so that said web is outside said platen defined spaces, moving said pair of cage assemblies inwardly toward each other to position one of said platens of each assembly behind the web to form a complete qroup receiving space and so that said web is located in said complete space, moving a composite group of items into said complete space defined by said platens so as to capture said web of stretchable film between a surface of the group and said one platen of each of said wrapping cage assemblies, rotating said cage assemblies and the group of items about a common axis so as to envelope the group of items and said platens with stretchable film, and withdrawing said wrapping cage assemblies outwardly away from each other to positions of disengagement with the group and said stretchable film.

4,461,137
METHOD OF MAKING AND FILLING A CORRUGATED CARTON

Charles E. Wood, 909 Rocky Canyon Rd., Arlington, Tex. 76012

Filed Jun. 1, 1982, Ser. No. 383,498
Int. Cl.[3] B65B *43/10*
U.S. Cl. 53—456 6 Claims



2. A method of constructing and filling a corrugated container, comprising in combination:

drawing a web of paper through corrugating rollers to define a corrugating web;

gluing backing webs of paper to each side of the corrugated web to define a composite web, one of the backing webs being of greater width than the other backing web and the corrugated web, resulting in a single layer portion and a three layered portion;

making fold lines in the composite web in places to define corners of the container, with the fold lines placed to position the three layered portion as the bottom of the container and the single layer portion as the top of the container;

shearing the composite web transversely into the sheet;

folding the sheet along the fold lines to define the container;

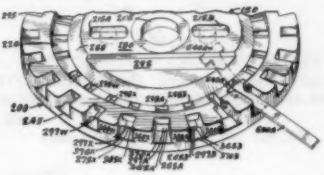
filling the container with goods; then

securing the single layer portion over the top of the goods.

4,461,138
HUB FOR FLEXIBLE CUTTING BLADES

Robert E. Whitman, 1-2143 Sherwood La., Swanton, Ohio 43558

Filed Dec. 17, 1982, Ser. No. 451,449
Int. Cl.[3] A01D *55/18*
U.S. Cl. 56—12.7 1 Claim



1. A hub for flexible grass cutting blade members for a power lawn mower comprising:

(a) a circular plate member, with an upper surface and a lower surface, and a circular perimeter, said circular plate member having a plurality of slotted openings extending completely through the plate member from the lower surface to the upper surface, said slotted openings having an access exposure on the lower surface of said plate member and having two access openings in the upper surface thereof;

(b) ring means having an upper surface and a lower surface integrally disposed on the upper surface of the plate member overlapping at least one of a portion of each said slotted openings; whereby each said slotted opening has two exposed accesses from the upper surface, and an opening to the lower surface;

(c) a plurality of raised boss members disposed over the upper surface of said plate member, whereby said boss members are disposed in succession intermediate the respective areas of the upper surface of said plate members which are just radially outwardly of the respective slotted members, and wherein said upper surface of said boss members is in the same plane as the upper surface as said ring members;

(d) a radially outer ledge on the upper surface of said hub member to receive a portion of the blade, said ledge being disposed between adjacent bosses;

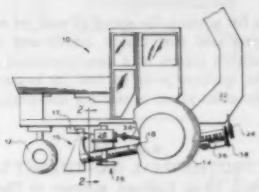
(e) a circular abutment means located radially on the upper surface of said plate member inwardly of the slotted openings to keep the cutting blade members from moving radially inwardly.

4,461,139

COTTON SHREDDER

Lupe E. Hernandez, P.O. Box 214, Snyder, Tex. 79549

Filed Jun. 28, 1982, Ser. No. 393,186
Int. Cl.³ A01D *14/02*
U.S. Cl. 56—14.5 6 Claims



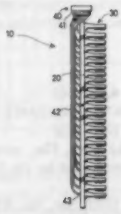
1. A-cotton harvester stalk shredder combination having:
a. a vehicle having
b. ground engaging wheels,
c. harvester elements below the vehicle for harvesting seed cotton from stalks,
d. the harvester elements angling from near the ground at the front upward toward the back of the elements,
e. auger conveyors in
f. conveyor troughs to receive and move the harvested seed cotton upward and rearward, and
g. drive means at the upper rear of the conveyors for rotating said conveyors;
wherein the improvement comprises:
h. a gear unit attached to the conveyor troughs,
i. a cutter shaft depending vertically downward from the gear unit,
j. a stalk cutter on the bottom of the cutter shaft,
k. a right angle gear drive in the gear unit and
l. a drive shaft extending from the gear unit to the drive means whereby the stalk cutter is driven by the drive means.

4,461,140

SPINDEL MOISTENER ASSEMBLY AND MOISTENER MEMBERS USED IN SUCH ASSEMBLIES FOR COTTON PICKERS

Mordechay Carmi; Benjamin Nur, and Tzipora Tesler, all of Ramat Hakovesh, Israel, assignors to Duram Rubber Products, Ramat Hakovesh, Israel

Filed Sep. 8, 1982, Ser. No. 415,924
Claims priority, application Israel, Mar. 5, 1982, 65174
Int. Cl.³ A01D *46/16*
U.S. Cl. 56—50 15 Claims



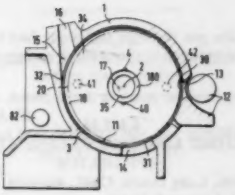
1. A spindle moistener assembly for a cotton picker of the type including a rotary picker drum carrying a plurality of picker spindles adapted to be moistened by the moistener assembly which includes a plurality of moistener members mounted in cantilever fashion to an elongated support with each moistener member including a mounting arm at one end secured to the support and a moistener pad at the opposite end disposed to be engaged by the picker spindles for moistening same during the rotation of the picker drum, characterized in that both the mounting arm and the moistener pad of each moistener member are constituted of resilient material permitting flexing thereof when engaged by said picker spindles wherein each of said moistener members is constituted of a unitary body of resilient materials integrally formed at one end with the mounting arm and at the opposite end with the moistener pad.

4,461,141

OPENING DEVICE FOR AN OPEN-END SPINNING APPARATUS

Eberhard Hofmann; Gottfried Schneider, and Johann Pohn, all of Ingolstadt, Fed. Rep. of Germany, assignors to Schubert & Salzer, AG, Ingolstadt, Fed. Rep. of Germany

Filed Mar. 1, 1983, Ser. No. 471,036
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1982, 3207575
Int. Cl.³ D01H *7/892*
U.S. Cl. 57—408 17 Claims



1. An insert for an opening device for an openend spinning apparatus, said spinning apparatus including a housing having a substantially cylindrical interior space therein, orifices connecting said interior space with other parts of said spinning apparatus, an opening roller carried in said interior space of said housing, a drive shaft extending outwardly from said opening roller through a bearing bore provided in said housing, an insert carried in said interior space surrounding said opening roller, perforations provided in said insert which correspond to said orifices, the improvement comprising:
said insert being a pot-like construction including,
(i) a peripheral wall;
(ii) a base joining said peripheral wall, and
(iii) a recess provided in said base in alignment with said drive shaft of said roller extending through said bearing bore, and
a fixing device securing the position of said insert relative to said housing.

4,461,142

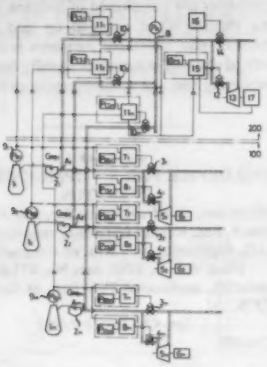
METHOD OF RECOVERY OF EXCESS GAS ENERGY OF BLAST FURNACE GAS

Osamu Nagata, Kobe; Satoru Matsukura, Miki; Hajime Yamada, Kobe, and Yozo Sasaki, Kurashiki, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Apr. 9, 1982, Ser. No. 366,907
Claims priority, application Japan, Apr. 15, 1981, 56-56635
Int. Cl.³ F02C *6/00*
U.S. Cl. 60—39.02 5 Claims

1. The method of recovering energy from the exhaust gases from a plurality of blast furnaces comprising:
passing exhaust gas from each of the blast furnaces through an exhaust gas line to a gas turbine thereby to recover energy from the exhaust gas;
delivering excess gas from each of said exhaust gas lines into separate excess gas lines respectively connected to each of said exhaust gas lines;
delivering all of said gas through said excess gas lines to a

single line connected to each of the excess gas lines and to an additional gas turbine; and



delivering the gas through the single line to the additional turbine to recover in the turbine energy contained in the gas.

4,461,143

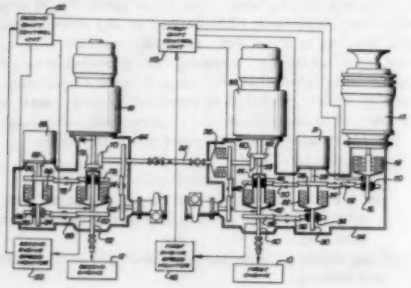
ON-BOARD AIRCRAFT ENGINE STARTING APPARATUS

Donald P. Shutt, Long Beach, Calif., assignor to Western Gear Corporation, Lynwood, Calif.

Filed Mar. 18, 1981, Ser. No. 245,136

Int. Cl.³ F02C *7/26*; F02G *3/00*

U.S. Cl. 60—39.142 **4 Claims**



1. In an aircraft having a jet engine, an apparatus for starting said engine comprising:

a starting power source;

first gear train means for delivering rotational power from said starting power source to said jet engine at a first mechanical advantage;

second gear train means arranged in parallel with said first gear train means for delivering rotational power from said starting power source to said jet engine at a second mechanical advantage, said second mechanical advantage being lower than said first mechanical advantage;

first clutch means for selectively connecting said first gear train means to said jet engine;

second clutch means for selectively connecting said second gear train means to said jet engine, said first and second clutch means each including (a) a plurality of interfacing plates and discs arranged in a stack at least some of which are provided on their opposing surfaces with cooling fluid distribution grooves extending outwardly from the centers thereof, and (b) means for supplying cooling fluid to the centers of said discs and plates whereby said oil is caused to continuously migrate radially outwardly across said surfaces to provide a thin shear film of cooling fluid thereon;

overrun means for transmitting power from said jet engine through the input side of said second clutch means while by-passing the output side of said second clutch means; and

shift means for sensing the speed of said jet engine and for disengaging said first clutch means and engaging said second clutch means at a predetermined engine speed above the ignition point of said jet engine that occurs during the assist phase of starting said engine.

4,461,144

ELECTROTHERMAL GAS THRUST UNITS

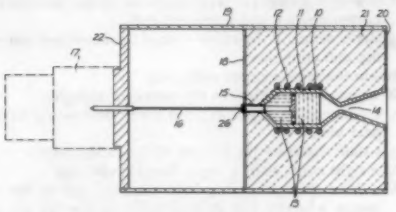
Stephen P. Field, Fleet, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Mar. 15, 1982, Ser. No. 358,106

Claims priority, application United Kingdom, Mar. 19, 1981, 8108630

Int. Cl.³ F02K *11/02*

U.S. Cl. 60—203.1 **7 Claims**



1. An electrothermal gas thrust unit comprising a thrust chamber defined by a cylindrical casing surrounded by a heating element, the thrust chamber containing a heat exchanger;

a convergent divergent thrust nozzle extending from a downstream end of said thrust chamber;

an extension tube extending upstream from an upstream end of said thrust chamber;

an injector tube leading into said extension tube and joined thereto at a junction to provide a flow path into said chamber via said extension tube, said extension tube having a diameter in excess of said injector tube;

a flow control valve connected to said injector tube and to a fuel supply; and

a heat conducting diaphragm connected to said extension tube adjacent said junction between said extension tube and said injector tube.

4,461,145

STALL ELIMINATION AND RESTART ENHANCEMENT DEVICE

Frederick D. Stephens, Lake Park, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 8, 1982, Ser. No. 433,561

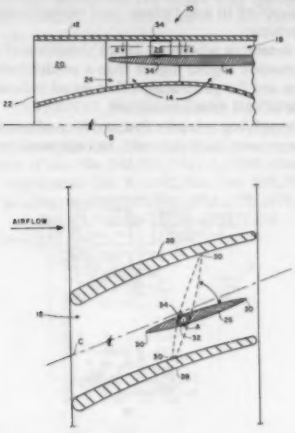
Int. Cl.³ F02K *3/075*

U.S. Cl. 60—226.3 **4 Claims**

1. In a jet turbofan engine having an axial flow central core engine surrounded by an inner wall and a fan bypass duct concentric with said core engine and defined between said inner wall and an outer wall, stall elimination means, comprising:

pairs of generally parallel struts arranged in an annular row and individually in the general direction of air flow through said bypass duct; and

a series of freely-rotatable airfoil-shaped vanes, each vane disposed between one of said pairs of struts and mounted between said inner and outer walls for rotation between an open position in which it is aligned with positive air flow



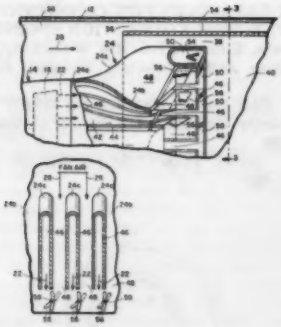
in the bypass duct, generally parallel with said pair of struts, and a substantially closed position in which it extends generally across the duct blocking most reverse air flow in said bypass duct.

4,461,146

MIXED FLOW SWIRL AUGMENTOR FOR TURBOFAN ENGINE

Thomas L. DuBell, Palm Beach Gardens, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 22, 1982, Ser. No. 436,091
Int. Cl.³ F02K *3/10*
U.S. Cl. 60—261 **3 Claims**



1. A mixed flow and swirl augmentor in combination with an axial flow fan jet engine of the type including a central turbine providing a hot gas core stream close to the axis of said turbine and an air induction fan providing a flow of bypass air around said turbine as an annular fan stream outwardly spaced from said core stream, said augmentor comprising:

crossover chute means, disposed downstream of said turbine, for channeling portions of said fan stream radially inwardly and portions of said core stream radially outwardly to form alternating radial zones of fan and core stream gases about the flow axis, and for additionally annularizing a portion of said core stream in an annular zone around said alternating radial zones of fan and core stream gases;

a plurality of pilot flameholders disposed in said crossover chute means;

means defining a combustion chamber aft of said crossover chute means for burning of augmenting fuel when injected upstream of said combustion chamber; and

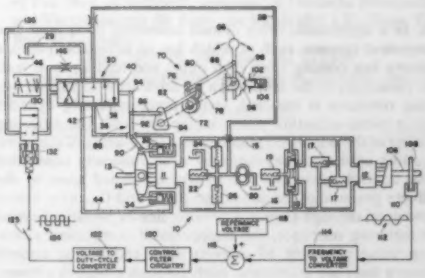
a plurality of radially extending vanes each substantially radially coextensive with said alternating radial zones and each mounted for rotation about a radially extending axis disposed between said alternating radial zones, said vanes all being movable in like directions about their respective axes between normal positions in alignment with walls of said chute means defining flows in said radial zones and augmentor operational positions at the same angles to said flows so as to cause rotational swirl thereof only in one direction about said flow axis as said flows leave said alternating radial zones and enter said combustion chamber, whereby a flame front formed in hot core stream gases of said annular zone is rapidly propagated radially inwardly of gases passing from said crossover chute means into said combustion chamber.

4,461,147

VARIABLE DISPLACEMENT HYDRAULIC CONTROL WITH OVERRIDE

H. Allen Myers, Ames, Iowa, assignor to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 27, 1981, Ser. No. 315,381
Int. Cl.³ F16D *31/02*
U.S. Cl. 60—389 **12 Claims**



1. An electric override control for a hydraulic system comprising; a variable displacement hydraulic pump, motor means hydraulically connected to said pump to be driven thereby, a source of control fluid, a hydraulic servo mechanism comprising a servo motor coupled to said pump to vary the displacement of said pump and a servo valve having a movable valve element for controlling the flow of control fluid to said servo motor, the improvement comprising:

a first manual input means,

resilient means including a spring operatively connecting said manual input means to said valve element to provide a yieldable force applied to said valve element which establishes a primary control position for said valve element,

expandable fluid chamber means operatively connected to said valve element and adapted to provide a hydraulic force on said valve element to move said valve element against the yieldable force of said resilient means establishing a primary control position when said expandable chamber means is subjected to fluid flow,

an electrically operated valve adapted to pass control fluid from said source to said expandable chamber means, and

a second input means generating an electric control signal to said electrically operated valve to modulate the flow of

control fluid to said expandable fluid chamber means to control the hydraulic force on said valve element in a manner which is balanced by the force applied by said spring.

4,461,148

HYDROSTATIC DRIVE SYSTEMS

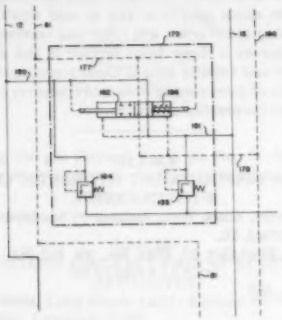
Alfred Krusche, Johannesberg, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Hollriegelskreuth, Fed. Rep. of Germany

Filed Nov. 24, 1981, Ser. No. 324,402

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1980, 3044171

Int. Cl.³ F16H *39/48*

U.S. Cl. 60—421 **4 Claims**



1. In a hydrostatic drive system consisting of at least two component systems, each of which has an adjustable pump, a delivery line coming from each pump and leading to at least one consumer, in the line which an arbitrarily adjustable metering restrictor is installed, and a pump adjusting cylinder with a pump adjusting piston connected with the adjusting element of the associated pump, where the loading of the pump adjusting cylinder is regulated by a hydraulically controlled servo control valve, one side of which is acted upon by the delivery pressure of the associated pump and the other side is acted upon through a control pressure line by pressure beyond the metering restrictor, the improvement comprising a coupling valve to which all delivery lines and all the control pressure lines are connected, each through a branch connection line wherein the said valve in the closed position shuts off all the branch connection lines and in the open position connects all the delivery lines together and all the control pressure lines together and is hydraulically controlled, a first pressure chamber on one side of said valve to which each delivery line is connected, a valve element in said pressure chamber being loaded with a pretensioned spring on said first chamber, and a second pressure chamber on the other side of said valve element to which each control line is connected, the said two pressure chambers assigned to one component system being of the same size on both sides of the valve element and the open position of the valve element being set when a pressure gradient prescribed by the pretensioning between the delivery line and the control pressure line is no longer reached.

4,461,149

TURBOCHARGER CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Satoshi Suzuki, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 13, 1981, Ser. No. 311,022

Claims priority, application Japan, Oct. 13, 1980, 55-142078

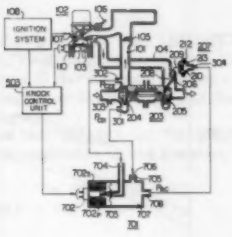
Int. Cl.³ F02B *37/12*

U.S. Cl. 60—602 **5 Claims**

1. A supercharger control system for use with an internal combustion engine comprising a supercharger for applying a supercharge pressure to the engine by driving a compressor with a turbine rotated by energy of the exhaust gas, and an exhaust gas bypass valve means for regulating an amount of the exhaust gas supplied to said turbine, said supercharger control system comprising:

means for detecting whether a knock condition of the internal combustion engine higher than a predetermined level is present and for generating a first signal indicative of an existance of said knock condition,

means for supplying at least a first and second pressure from said compressor, said first and second pressure varying



with a variation of a rotational speed of the engine, said second pressure being higher than said first pressure when the rotational speed of the engine is less than a predetermined value,

means for modifying at least one of the first and second pressures in dependence upon said first signal and for combining the modified pressure with the other of said first and second pressures to produce a combined pressure and

an actuator means connected to said means for modifying and combining for receiving the combined pressure and for controlling an opening of said exhaust gas bypass valve means in accordance with the combined pressure.

4,461,150

EXHAUST GAS RETURN PIPE CONNECTION FOR AN INTERNAL COMBUSTION ENGINE

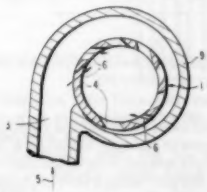
Michael Grohn, Esslingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Feb. 22, 1982, Ser. No. 350,872

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1981, 3106588

Int. Cl.³ F02B *37/00*; F02M *25/06*

U.S. Cl. 60—605 **6 Claims**



1. A connection for an exhaust gas return system of an internal combustion engine, comprising an exhaust gas return pipe means, an intake pipe means, connecting means for connecting the exhaust gas return pipe means with the intake pipe means, the connecting means including a spiral duct means extending spirally about substantially the entire intake pipe means and the intake pipe being provided with a plurality of overflow open-

ings inclined in the radial direction, distributed over the circumference of the intake pipe means and leading into the intake pipe means to establish a communication between the spiral duct means and interior of the intake pipe means to thereby assure a substantially even distribution of the exhaust gases in the air of the intake pipe means.

4,461,151

INTERNAL COMBUSTION ENGINE

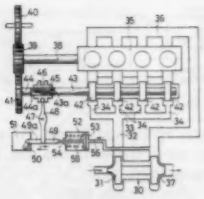
Hiroshi Kanesaka, Kanagawa, Japan, assignor to Kanesaka Technical Institute Ltd., Kanagawa, Japan

Continuation of Ser. No. 145,540, May 1, 1980, abandoned. This application Jul. 6, 1982, Ser. No. 395,381

Claims priority, application Japan, May 7, 1979, 54-54720

Int. Cl.³ F02B *37/00*; F01L *1/34*

U.S. Cl. 60—611 **15 Claims**



1. A turbocharged four-stroke, compression ignition type internal combustion engine having a substantially constant horsepower output above a predetermined engine speed comprising:

at least one main piston and associated cylinder;

a combustion chamber defined by said main piston and said cylinder;

an intake port communicating with intake passage means;

an exhaust port communicating with exhaust passage means;

a crankshaft;

a turbocharger having a turbine and a blower, said blower supplying air to said combustion chamber for supporting combustion of fuel in said combustion chamber, said turbine driving said blower and being driven by exhaust gases from said combustion chamber;

fuel supply control means;

control valve means for periodically opening and closing said intake passage means in response to rotation of said crankshaft, said control valve means being disposed in said intake passage means;

means for adjusting an opening and closing timing of said control valve means in response to a predetermined engine operating parameter and means for connecting said adjusting means to said fuel supply control means so that said adjusting means controls said fuel supply control means to control an amount of fuel supplied by said fuel supply control means, said adjusting means limiting and keeping substantially constant a fuel supply and an air supply charge delivered per unit time to said combustion chamber above said predetermined engine speed.

4,461,152

CONTROL APPARATUS FOR STEAM TURBINE

Yasuhiro Tennichi, and Naganobu Honda, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

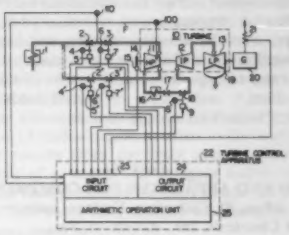
Filed Apr. 12, 1982, Ser. No. 367,674

Claims priority, application Japan, Apr. 16, 1981, 56-56246

Int. Cl.³ F01K *13/02*

U.S. Cl. 60—660 **7 Claims**

1. An apparatus for controlling a steam turbine of a thermal power plant operated under a variable steam pressure, the apparatus comprising means for detecting a turbine stage pressure and for supplying an output signal thereof, means for controlling an opening of control valve means provided at an inlet side of the steam turbine, means for detecting a steam pressure at the inlet side of said control valve means and for providing an output signal thereof, and means for receiving the output signals from said turbine stage pressure detecting means



and said steam pressure detecting means and for providing a modified opening set signal to the controlling means whereby the opening of the control valve means is controlled on the basis of said turbine stage pressure and the steam pressure at the inlet of said control valve means.

4,461,153

METHOD AND APPARATUS FOR INOCULATING CRYSTALLIZATION SEEDS INTO A LIQUID LATENT HEAT STORAGE SUBSTANCE

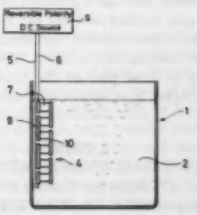
Friedrich Lindner, Stuttgart, and Kurt Scheunemann, Lahr, both of Fed. Rep. of Germany, assignors to Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt e.V., Bonn, Fed. Rep. of Germany

Filed Nov. 19, 1981, Ser. No. 322,924

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1980, 3044202

Int. Cl.³ F25B *21/02*

U.S. Cl. 62—3 **2 Claims**



1. Apparatus for producing crystal seeds within a liquid latent heat storage medium (2) having a given crystallization temperature and which solidifies on cooling, comprising

(a) container means (1) containing a given volume of said liquid latent heat storage medium;

(b) at least one Peltier element (4) arranged within said container means and immersed in said liquid latent heat storage medium, said Peltier element including first and second crystallization surfaces (9, 10) of opposite polarity on opposite sides thereof; and

(c) reversible polarity DC source means (S), including

(1) first current means (5) connected with said Peltier element for supplying a first current of a given polarity to said crystallization surfaces for heating said first crystallization surface to a temperature above said crystallization temperature and for cooling said second crystallization surface to a temperature below said crystallization temperature to form crystal seeds thereon; and

(2) second current means (6) connected with said Peltier element for supplying a second current of opposite polarity from said first current to said crystallization surfaces for cooling said first crystallization surface to a temperature below said crystallization temperature to form crystal seeds thereon and for heating said second crystallization surface to a temperature above said crystallization temperature to release crystal seeds therefrom, whereby alternate cooling and heating of said crystallization surfaces owing to said first and second currents of opposite polarity results in the continuous production and release of crystal seeds within said liquid latent heat storage medium.

4,461,154

METHOD AND APPARATUS FOR COMPRESSING GAS

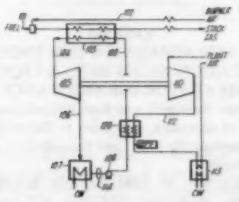
Rodney J. Allam, St. Catherines, England, assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 14, 1982, Ser. No. 388,375

Claims priority, application United Kingdom, Jun. 18, 1981, 8118865

Int. Cl.³ F25B 9/00

U.S. Cl. 62—87 **9 Claims**



1. A method of compressing a gas which method comprises the step of: compressing said gas in a generally adiabatic manner in a compressor through a pressure ratio of at least 2.5:1 to produce a hot gas; cooling said hot gas by heat exchange with a coolant, thereby transferring heat from the hot gas to the coolant; further heating said coolant, if necessary, in a boiler and recovering at least part of the heat transferred to said coolant and utilizing it to power said compressor.

4,461,155

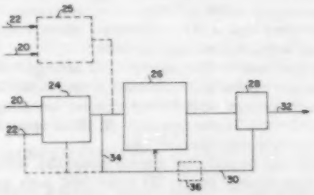
AIRCRAFT CABIN VENTILATION SYSTEM

Bertil Werjefelt, 277 Kaha St., Kailua, Hi. 96734

Continuation-in-part of Ser. No. 073,612, Sep. 10, 1979, Pat. No. 4,437,318. This application Sep. 10, 1980, Ser. No. 185,962

Int. Cl.³ F25D 17/06

U.S. Cl. 62—93 **28 Claims**



1. An aircraft cabin humidification system for humidifying an air mass within said cabin said system comprising:

(a) replacement means for ventilating said cabin with a ram air stream;

(b) means for exhausting at least a portion of said air from said cabin;

(c) removal means for at least partially removing moisture from said air exhausted from said cabin;

(d) recycle means for recycling at least a portion of said moisture from said exhausted air; and

(e) humidification means for humidifying said cabin by adding at least a portion of said recycled moisture to said cabin.

4,461,156

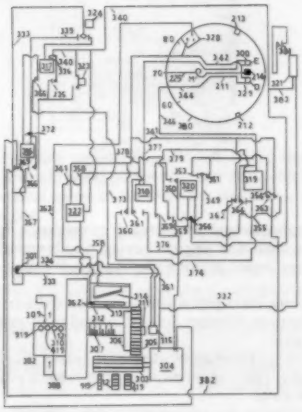
SYSTEM FOR CONDITIONING AN AREA

Morton Weintraub, 942 E. 10th St., Brooklyn, N.Y. 11230

Continuation-in-part of Ser. No. 098,364, Nov. 28, 1978, abandoned. This application Nov. 30, 1981, Ser. No. 324,405

Int. Cl.³ F25B 45/00, 41/04

U.S. Cl. 62—149 **30 Claims**



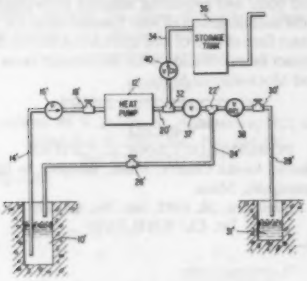
1. A temperature control apparatus comprising, means for controlling a variable chamber such that said chamber controls refrigerant pressure of a refrigeration circuit in a relationship in accordance with the varying and regulating of a point temperature setting, means for enabling the compressor of said circuit to start up without a starting winding, scanning means for scanning temperature responsive means thereby determining whether or not said refrigerant pressure is to be increased or decreased such that said increase or decrease providing said temperature of an area that is equal to the point temperature of said temperature setting and wherein said refrigerant pressure is increased or decreased in accordance with said determination, controlled in said relationship in accordance with the varying and regulating of a point temperature of a temperature setting, a plurality of magnetic switching means, a first of said plurality of magnetic switching means activating and deactivating a first winding of a motor, a second of said plurality of magnetic switching means activating and deactivating a second winding of said motor, said activating and deactivating of said first winding is accomplished via a first relay, said activating and deactivating of said second winding is accomplished via a second relay, a third of said plurality of magnetic switching means controls said second winding via a third relay such that said third relay serves to decrease said refrigerant pressure upon a simultaneous activation of said first and said second winding, said magnetic switching means is controlled by a magnet moving in and out of the magnetic influence of said magnetic switching means such that said motor controlling said variable chamber is activated when said temperature is not equal to the point temperature of said temperature setting.

4,461,157

GROUND WATER HEAT PUMP SYSTEM FOR LOW YIELD WELL

Robert P. Shapess, Cata, N.Y., assignor to Snyder General Corporation, Dallas, Tex.

Filed Feb. 3, 1982, Ser. No. 345,293
Int. Cl.³ F25B 27/02
U.S. Cl. 62—238.6 8 Claims



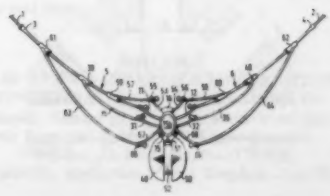
1. A ground water heat pump system comprising a well, a heat pump requiring ground water from said well for heat transfer between said heat pump and said ground water at a rate greater than the ground water supply capability of said well, a supply line connecting said well with said heat pump, a water pump for delivering ground water from said well by way of said supply line to said heat pump, a discharge line into which ground water is discharged by said heat pump after heat transfer between said heat pump and said ground water, a feedback line interconnecting said discharge line and said well for returning some of the discharged ground water directly back to said well from which said ground water is delivered to mix with water flowing into said well from the ground to prevent depletion of the ground water supply capability of said well, and piping for otherwise disposing of the rest of the discharged ground water at a site other than said well.

4,461,158

ARTICLE OF JEWELLERY

Walter Diehl, Flüggenstreet 12, 8000 Munich 19, Fed. Rep. of Germany

Continuation of Ser. No. 245,843, Mar. 20, 1981, Pat. No. 4,381,653. This application Apr. 21, 1983, Ser. No. 487,493
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1980, 3011923; Mar. 27, 1980, 8008495[U]
The portion of the term of this patent subsequent to May 30, 2000, has been disclaimed.
Int. Cl.³ A44C 25/00
U.S. Cl. 63—2 12 Claims



1. An article of jewellery, especially for simulating the wing or leg movements of an insect, comprising:

(a) rigid elongate body means for representing the insect body,

(b) a pair of rigid elongated wires (5,6) having outer ends (3,4) attached to ends (1,2) of a necklace,

(c) first joint means (9,10; 13,14) individually and freely articulating inner ends of the wires to laterally spaced first points on opposite sides of a forward portion of said body means,

(d) a pair of equally configured elongate members,

(e) second joint means individually and freely articulating an inner end of each elongate member to laterally spaced second points on opposite sides of a rearward portion of said body means, said second articulation points being longitudinally spaced from said first articulation points on said body means, and

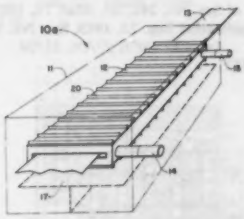
(f) coupling means individually and slidably connecting an outer end of each elongate member to the wires at points laterally remote from the body means, whereby upon movement of a wearer the elongate members hinge at their inner ends proximate the body means and slide on the wires at their outer ends, thereby simulating body appendage movements of an insect.

4,461,159

APPARATUS FOR THE STABILIZATION OF FIBERS

Roger Prescott, Johnson City, Tenn., assignor to Great Lakes Carbon Corporation, New York, N.Y.

Filed Mar. 30, 1983, Ser. No. 480,458
Int. Cl.³ D06B 3/02
U.S. Cl. 68—5 D 7 Claims



1. An apparatus for the continuous thermal oxidative stabilization of organic fibers which undergo exothermic reaction during treatment thereof having at least one oxidizing chamber for passing said fibers therethrough, said chamber having a wall of high thermal conductance with at least the internal surface thereof being of high total normal emissivity for absorption of heat from sai fibers produced during oxidation thereof via radiative heat transfer, wherein the wall of said oxidizing chamber has heat transfer means whereby the heat produced during oxidation of the fibers is effectively transferred away from said wall.

4,461,160

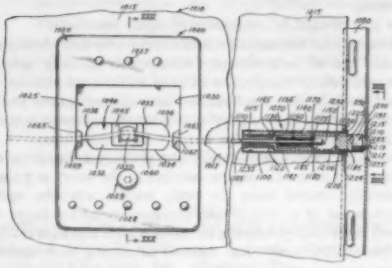
SELF-LATCHING, SEMI-AUTOMATIC DOOR LOCK AND OPENER

James Van Gompel, Fremont, Ind., assignor to Brammall, Inc., Angola, Ind.

Division of Ser. No. 035,685, May 3, 1979. This application Oct. 23, 1980, Ser. No. 199,945
Int. Cl.³ E05B 55/14, 65/08; E05C 1/12
U.S. Cl. 70—100 1 Claim

1. A self-latching, semi-automatic door lock and opener for a door slidably moveable relative to a door frame comprising, a pair of spring biased bolts attached to opposite sides of the door, a pair of bolt receiving means attached to opposite sides of the door frame and positioned to receive said bolts when said door is closed, a single cable extending between and attached to said bolts, guide means attached to said door and said cable passing therethrough, a recess formed in said door through which said cable passes, a handle cover member pivot-

ally attached to said door so that it closes said recess when said handle-cover member is closed and said handle cover member pivotally mounted on a pivot shaft which is attached to said door and extends in the same direction of said cable, a hook

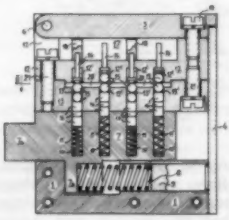


attached to said handle cover member and said cable engaged by said hook within said recess, a locking pin attached to said door, and a female locking member attached to said handle cover member and engageable with said locking pin to lock said handle cover member to said door.

4,461,161
LOCKING DEVICE

David Shpigelman, 1 Mavo Gilath, Ramoth Zahala, Tel Aviv, Israel

Continuation of Ser. No. 242,702, Mar. 11, 1981, abandoned. This application Sep. 23, 1983, Ser. No. 535,537
Int. Cl.³ E05B *27/06, 35/04*
U.S. Cl. 70—352 **7 Claims**

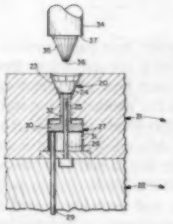


1. A locking device adapted to be operated by a punched card comprising a casing, a bolt which is slidably accommodated within said casing, and a block-shaped body located within said casing overlying said bolt, the upper face of said bolt and the lower face of said block-shaped body being in close contact, with said bolt being slidably displaceable relative to said block-shaped body, a number of bores provided in said bolt and extending downwardly from said upper face of said bolt and corresponding bores in the lower face of the block-shaped body in axial alignment with and opening to said bolt, tumbler units being located in said bores in said bolt and in said block-shaped body, said tumbler units each being formed the same and comprising three superposed cylindrical bodies and a pair of spheres located above and resting on said cylindrical bodies, the uppermost and the lowermost of which are of equal axial extension, the middle one being of smaller axial extension, each said tumbler unit located partly in one of the bores of said bolt and partly in the corresponding axially aligned bore of said block-shaped body, said tumbler units divided into a first group and a second group with the first group of said tumbler units arranged in said bores so that the lowermost of the cylindrical bodiestraverses the contact line between said bolt and block-shaped body, while the second group of said tumbler units in the remaining said bores have the contact face between the uppermost body and the middle cylindrical body coinciding with the contact faces between said bolt and block-shaped body, an inlet port in the shape of an elongated slot provided in said block-shaped body extending transversely of and intersecting said bores in said block-shaped body, said slot arranged to receive the punched card which is of a thickness equal to the axial extension of said middle cylindrical body, one of said pair of spheres of each said tumbler unit lying partly within range of said slot, and discrete means each selectively positionable within said casing above said block-shaped body and providing separate individual engagement with the second group of said tumbler units for positioning the contact face of two of said cylindrical bodies thereof so that the contact faces coincide with the contact faces between said bolt and block-shaped body.

4,461,162
FORGING OF CONICAL LINERS

David R. Ibach, Anoka County, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 20, 1982, Ser. No. 420,199
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—344 **4 Claims**

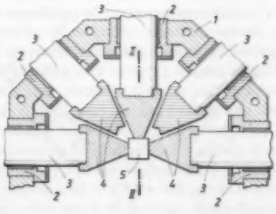


1. Forging apparatus comprising, in combination:
a die having a concave tapering configuration, with a cylindrical extension at the smaller end;
a first punch having a concave tapering configuration;
a second punch having a diameter less than the inside diameter of said extension;
means mounting said second punch to project co-axially into said extension of said die from said smaller end;
and means mounting said first punch for movement co-axially into said die from the larger end thereof.

4,461,163
SWAGING MACHINE

Bruno Kralowetz, St. Ulrich, A-4400 Steyr, Austria

Filed Oct. 25, 1982, Ser. No. 436,272
Claims priority, application Austria, Nov. 13, 1981, 4881/81
Int. Cl.³ B21J *7/14*
U.S. Cl. 72—402 **1 Claim**



1. In a swaging machine comprising:
a swaging box defining therein a path for a workpiece to be swaged,
a plurality of swaging rams which are disposed in said swag-

ing box, extend radially with respect to said path and define a common swaging plane which intersects said path, and

a plurality of swaging dies secured to respective ones of said rams at the radially inner ends thereof,

the improvement residing in that each of said rams has a substantially elliptic cross-section which has a major axis that is parallel to said path with the rams being mounted on guides provided with sealing rings such that said sealing rings engage the rams throughout their boundary curve without any discontinuity.

4,461,164

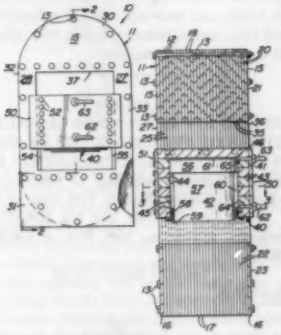
PRESS CONSTRUCTION

Samuel Laviano, 85 S. Poplar St., Gibbstown, N.J. 08027

Filed Sep. 9, 1982, Ser. No. 416,120

Int. Cl.³ B21D *37/12*

U.S. Cl. 72—455 **5 Claims**



1. A press construction comprising opposite frame ends, frame sides connected between said frame ends, said frame ends and sides combining to define a frame having therein a working opening, expansile and contractile ram means mounted in said opening having its opposite ends adjacent to respective opposite frame ends, and fluid operating means for expanding and contracting said ram means respectively toward and away from said frame ends for performing work between each end of said ram means and the adjacent frame end, said ram means comprising a hollow cylinder having one end open and one end closed, a piston slidable in the hollow of said cylinder and having one end extending outwardly through the open end of said cylinder, said closed cylinder end and said extending piston end constituting said opposite ram ends, the interior of said cylinder between said closed cylinder end and piston defining an expansile and retractile fluid chamber for expanding and contracting said ram means, and guide members secured exteriorly of said cylinder and extending exteriorly of said frame to mount said ram means for longitudinal movement relative to said frame.

4,461,165

METHOD OF AND APPARATUS FOR MONITORING CONCENTRATION OF GAS IN A LIQUID

James Kesson, Edinburgh, Scotland, assignor to Scottish & Newcastle Breweries Limited, Edinburgh, Scotland

Filed Jun. 22, 1981, Ser. No. 275,964

Claims priority, application United Kingdom, Jun. 27, 1980, 8021127

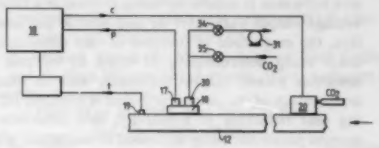
Int. Cl.³ G01N *7/10*

U.S. Cl. 73—19 **9 Claims**

1. A method of controlling the concentration of gas in a liquid comprising:

passing said liquid across a semi-permeable membrane in order that gas in the liquid may permeate through the membrane into a measuring chamber,

generating a pressure representative electrical signal representative of the pressure of the permeated gas in said chamber,



comparing said pressure representative signal with an electrical signal representative of a desired concentration of gas in the liquid to generate a control signal, and

using said control signal to control the quantity of said gas injected into the liquid thus to maintain constant the concentration of gas in the liquid.

4,461,166

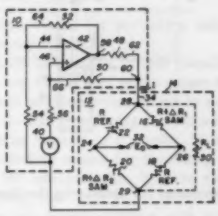
DYNAMIC CURRENT DRIVE METHOD FOR POWERING THERMAL CONDUCTIVITY DETECTORS

Ronald A. Gatten, Placerville, and Paul L. Patterson, Walnut Creek, both of Calif., assignors to Delta Associates, Inc., San Jose, Calif.

Filed Feb. 26, 1982, Ser. No. 352,657

Int. Cl.³ G01N *25/36*

U.S. Cl. 73—27 R **24 Claims**



1. Apparatus for maintaining sensitivity and response linearity of a gas detection device, comprising in combination:

an electrical energy source means coupled to a first input terminal of a differential sensing means through a first source output means for providing a first parameter to said differential sensing means, a second source output means connected between said source means and a second input terminal of said differential sensing means for providing a second parameter to said differential sensing means, the differential sensing means including an output terminal, a first feedback means connected between said output terminal of the differential sensing means and said first input terminal of the differential sensing means for providing a first feedback parameter, a parameter sensing means coupled to said output terminal of said differential sensing means for developing an electrical voltage parameter responsive to the magnitude of an electrical current parameter provided by the differential sensing means; a second feedback means connected between an output terminal of said parameter sensing means and said second input terminal of the differential sensing means for providing a second feedback parameter; and

detection means coupled to said output terminal of said parameter sensing means and to the source means for monitoring deviations in a voltage output parameter responsive to variations in a detection means current parameter and a differential resistance of the detection means, said detection means current parameter being weakly

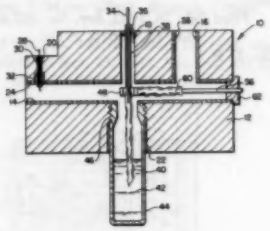
dependent upon said differential resistance of the detection means, said voltage output parameter being linearly dependent upon a sample gas concentration to at least one-hundred percent of said sample gas concentration for opposing a reduction in sensitivity of the detection means, said reduction in sensitivity being defined as a ratio of said voltage output parameter to said sample gas concentration, the magnitude of increase of said differential resistance being determinative of when an increase in said detection means current parameter and an increase in temperature of the detection means is required for opposing said reduction in sensitivity, said detection means current parameter being increased in magnitude when said sample gas concentration exceeds ten-percent and said sample gas having a lower thermal conductivity than a reference gas supplied to said detection means.

4,461,167

PSYCHROMETER FOR MEASURING THE HUMIDITY OF A GAS FLOW

Albert C. Kent, and Howard N. Rosen, both of Carbondale, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 5, 1981, Ser. No. 308,747
Int. Cl.³ G01N *25/62*
U.S. Cl. 73—29 **7 Claims**



1. A psychrometer for measuring the humidity of a gas flow, comprising:

a first sensor for measuring the dry bulb temperature of said gas flow;

a second sensor for measuring the wet bulb temperature of said gas flow;

a wick surrounding said second sensor and capable of absorbing a volatile liquid;

liquid supply means for supplying said volatile liquid to said wick adjacent said second sensor; and

liquid preheater means for heating said volatile liquid to a temperature within about 5 C.° of said wet bulb temperature sensed by said second sensor before said liquid is supplied to said liquid supply means.

4,461,168

HYDROGEN EMBRITTLEMENT TESTER

Masami Kobayashi, 3-13-15, Hachimanyama, Setagaya-ku, Tokyo, Japan

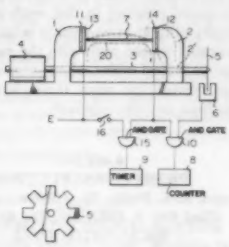
Filed Jul. 22, 1982, Ser. No. 400,693
Claims priority, application Japan, Mar. 8, 1982, 57-35211
Int. Cl.³ G01N *3/20*
U.S. Cl. 73—87 **6 Claims**

1. A hydrogen embrittlement tester for a metal sample comprising:

a vise device having a pair of opposed members for holding the sample therebetween, electrically conductive plate means mounted on the opposed edges of said members via insulating material for forming an electric path between both plate means through the sample to be tested;

first means for actuating one of said members such that the members are brought close to or away from each other;

second means for measuring the distance between said members; and



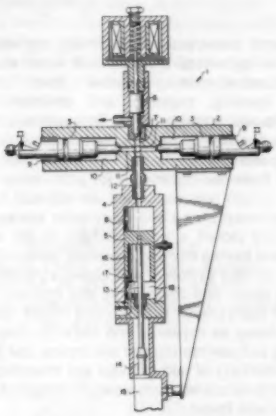
third means for measuring the time from when the sample is held between said members until it is fractured, said second and third means being operable only when the sample is held between said members.

4,461,169

METHOD AND APPARATUS FOR MEASURING THE QUANTITIES OF FUEL INJECTED BY INJECTION PUMPS FOR INTERNAL COMBUSTION ENGINES

Ulrich Augustin, Kernen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 429,677
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1981, 3139831
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—119 A **26 Claims**



1. A method for measuring quantities of fuel, the steps comprising

successively injecting through injection nozzles, which are connected to a measuring apparatus, fuel into a measuring chamber possessing a measuring piston,

applying to the piston an opposing gas pressure,

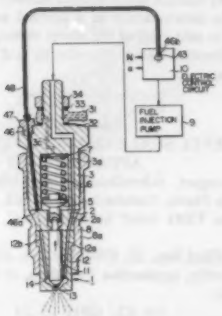
advancing said piston unidirectionally in a direction opposed to said gas pressure to expand the chamber in response to the quantities of fuel successively injected, the starting position of the piston, when executing an advancing movement, being, in each case, the same as its final position during the previous advancing movement, and

detecting each final position of the piston.

4,461,170
FUEL INJECTION DEVICE FOR DIESEL ENGINES

Yutaka Suzuki, Nishio; Taro Tanaka, Nagoya; Osamu Ito, Toyota; Nobuhito Hobo, Inuyama; Yoshihiko Tsuzuki, Toyota, and Satoshi Haseda, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 9, 1982, Ser. No. 440,346
Claims priority, application Japan, Nov. 10, 1981, 56-180886; Nov. 30, 1981, 56-192478
Int. Cl.³ G01N *15/00*
U.S. Cl. 73—119 A 7 Claims



1. In a fuel injection device for Diesel engines comprising a fuel injection nozzle mounted to an engine to inject fuel into a combustion chamber of said engine, said nozzle having a nozzle body formed at the forward end thereof with a nozzle opening and partly projecting into said combustion chamber, a nozzle needle slidably disposed in said nozzle body to open and close said nozzle opening and an oil sump disposed at the forward end of said nozzle body and operatively communicating with said nozzle opening, the improvement comprising:

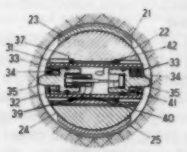
light path means disposed in said nozzle body and having one end thereof opened to said oil sump to transmit a light of a flame caused by the burning of a mixture in said combustion chamber; and

photoelectric transducer means responsive to said light transmitted from said light path means to generate an electric signal.

4,461,171
METHOD AND APPARATUS FOR DETERMINING THE IN SITU DEFORMABILITY OF ROCK MASSES

Rodolfo V. de la Cruz, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jan. 13, 1983, Ser. No. 457,716
Int. Cl.³ E21B *49/00*
U.S. Cl. 73—151 20 Claims



18. Apparatus for use in determining the deformability of rock formations surrounding a borehole, comprising:

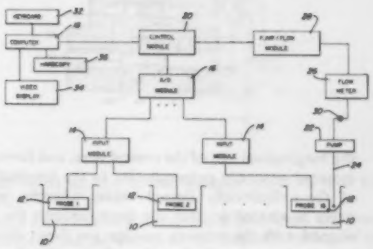
(a) means for applying pressure to opposite segments of the borehole wall, and

(b) lateral displacement probe means, associated with the means for applying pressure, for measuring the displacement of the wall of the borehole along a diameter at positions of the borehole wall which are not under pressure from the means for applying pressure, and for providing an output signal indicative of such displacement of the borehole wall.

4,461,172
WELL MONITORING, CONTROLLING AND DATA REDUCING SYSTEM

Charles B. McKee; Duane B. McKee, both of Fort Collins, Colo., and H. Kent Wainwright, Laramie, Wyo., assignors to Inc. In-Situ, Laramie, Wyo.

Filed May 24, 1982, Ser. No. 381,030
Int. Cl.³ E21B *47/10*
U.S. Cl. 73—155 16 Claims



1. An apparatus for monitoring data associated with well water drawdown and providing a real time reduction of the data, comprising:

a plurality of probe means for providing data related to drawdown of water in wells;

a first module means responsive to said plurality of probe means for selecting one of said probe means and converting data from said selected probe means to a digital form;

computer means for use in reducing the drawdown related data in a real time manner to a graphic form, said computer means including means for providing at least one graphic form for interpretation by one skilled in the ground water field; and

second module means communicating with said computer means and said first module means for controlling the transfer of digital data to said computer means from said first module means and for controlling the transfer of control information from said computer means to said first module means.

4,461,173
MULTIRANGE FLOWMETER

John G. Olin, Carmel Valley, Calif., assignor to Sierra Instruments, Inc., Carmel Valley, Calif.

Filed May 17, 1982, Ser. No. 378,884
Int. Cl.³ G01F *5/00*
U.S. Cl. 73—203 1 Claim

1. A dual-range flowmeter for measuring the mass flow rate of a gas comprising:

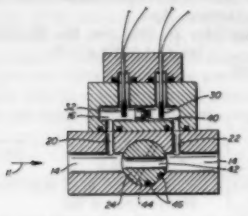
a housing having a central bore therethrough defining a primary passage for the gas and at least one secondary bore defining a secondary passage of lesser diameter communicating at its ends with the primary passage;

a sensor located within the secondary passage for measuring the rate of mass flow of gas through the secondary passage, said sensor including a resistance temperature detector immersed in the flow in the secondary passage, means for maintaining the resistance temperature detector at a generally constant temperature differential above the temperature of the flowing gas and means coupled to the resistance temperature detector for sensing the electrical

power loss of the resistance temperature detector caused by the cooling effect of the flowing gas;

a nozzle located within the secondary passage for increasing the velocity of the gas flowing past the resistance temperature detector; and

a valve located within the central bore between the locations where the ends of the secondary passage communicate with the primary passage, said valve being cylindrically shaped, rotatable about an axis generally perpendicular to



the longitudinal axis of the central bore, and having a bore oriented generally perpendicular to the longitudinal axis of the cylindrically shaped valve, whereby when the valve is rotated so that the bore through the valve is aligned with the primary passage gas flows through the primary passage and when the valve is rotated so that the bore through the value is not aligned with the primary passage all of the gas flows through the secondary passage.

4,461,174

VANE WHEEL WATER METER

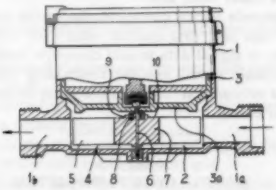
Eui M. Han, Seoul, Rep. of Korea, assignor to Shinhan Kongki Co., Ltd., Incheon, Rep. of Korea

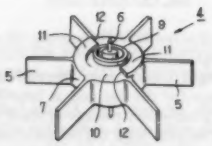
Filed Jul. 7, 1982, Ser. No. 396,014

Claims priority, application Rep. of Korea, Jul. 16, 1981, 1981-5053[U]; Mar. 23, 1982, 1982-2215[U]

Int. Cl.³ G01F *1/07*

U.S. Cl. 73—275 **11 Claims**





4. A vane wheel water meter comprising:

a meter body provided with a water counter;

a vane chamber located under said meter body and between an inlet and an outlet;

a vane wheel rotatably mounted in said vane chamber for driving the water counter to determine amount of water being supplied;

said vane wheel having a body with a longitudinal axis;

several spaced apart vanes extending outwardly from said vane wheel body perpendicular to said axis;

stop means on an upper surface of said vane wheel body for stopping said vane wheel from rotating in a reverse rotational direction relative to said inlet of the water meter; and

said stop means being at least one stepped back stop having a first surface extending perpendicularly upwardly from said upper surface and a second surface annularly inclined gradually downwardly in a normal rotational direction relative to said inlet of the water meter, said normal rotational direction being opposite to said reverse rotational direction.

4,461,175

LIQUID LEVEL SCALE CHANGEOVER MEASURING APPARATUS

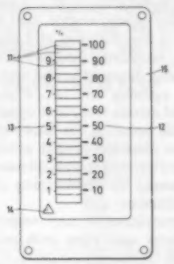
Hans J. Baumgart, Schwalbach; Klaus Albrecht, Liederbach, and Martin Haub, Steinbach, all of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Fed. Rep. of Germany

Filed Sep. 15, 1980, Ser. No. 188,744

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1979, 2937042

Int. Cl.³ G01F *23/24*

U.S. Cl. 73—295 **4 Claims**



1. Apparatus for measuring the liquid level in a container and particularly the level of fuel in a fuel tank of a motor vehicle, comprising:

a first group of series connected sensing elements arranged at different elevations in the tank and associated with a first measurement range;

an indicator stage connected with at least one sensing element, so that the change of the sensing elements between submerged and emerged condition in dependence on the liquid level in the tank is detected and used to control the respective indicator stage associated with said at least one sensing element;

a second group of series connected sensing elements, said second group being connected in series to said first group of sensing elements, similar to the first group arranged at different elevations in said container and associated with a second measuring range, the sensing elements of said second group being arranged in closer effective distances from each other in said container than the sensing elements of said first group;

the indicator stages associated with a sensing element of the first group being provided to indicate on a first scale means on a housing the change of a respective sensing element of the second group;

a change-over apparatus having a control input connected with a sensing element associated with a predetermined liquid level to change the indicator stages from said first to said second group of sensing elements;

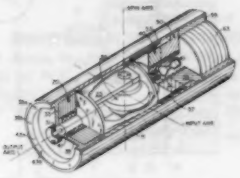
and additional indicator means connected with said change-over apparatus to indicate on a second scale means on a housing the effective first or second measurement range.

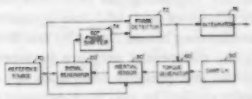
4,461,176

MINIATURE GYROSCOPE

Gerald M. Nearman, Framingham, and Lewis S. Bostivick, Andover, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jan. 4, 1982, Ser. No. 336,983
Int. Cl.³ G01C *19/42*
U.S. Cl. 73—504 **1 Claim**





1. In a miniature rate-integrating gyroscope wherein a gyroscopic mass is mounted on a gimbal having a single degree of movement within a cylindrical case, the improvement comprising:

(a) means for generating an alternating signal having a phase, relative to the phase of a reference signal, representative of any rotation of the gimbal within the cylindrical case and for shifting the phase of a reference signal, representative of any rotation of the gimbal within the cylindrical case and for shifting the phase of such alternating signal by 90°;

(b) phase detector means, responsive to the phase-shifted alternating signal and the reference signal, for producing a bipolar control signal corresponding to the difference between the phases of the alternating and reference signals; and

(c) torque generating means, responsive to the bipolar control signal and operative on the gimbal, for nulling any rotation of the gimbal, such torque generating means including:

(i) a plurality of equally spaced permanent magnets fixed within the cylindrical case centrally thereof;

(ii) a like plurality of serially-connected coils affixed to the gimbal, each one of such coils being in the field of one of the equally spaced permanent magnets; and

(iii) means for connecting the bipolar control signal to the serially-connected coils to apply a torque to the gimbal to null the bipolar control signal.

4,461,177

ACOUSTIC EMISSION TRANSDUCER PACKAGE

Ching C. Feng, San Juan Capistrano, Calif., assignor to Dunegan Corporation, Mission Viejo, Calif.

Filed Jul. 28, 1982, Ser. No. 402,705
Int. Cl.³ G01N *22/02*
U.S. Cl. 73—587 **14 Claims**

1. An acoustic emission transducer for sensing surface flat frequency response displacement waveforms in the surface of objects comprising

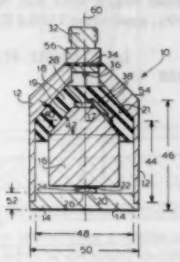
(a) a piezoelectric member having an upper and a lower surface;

(b) an inertia mass positioned adjacent said upper surface;

(c) flow communication means interconnecting said mass to signal reading equipment for conveying the electrical output of said transducer to signal reading equipment;

the improvement comprising

(d) a housing defining a compartment for said member and said mass, and having a base plate;



(e) said lower surface of said member engaging said base plate;

(f) means for selectively fixing one of said upper and lower surfaces of said member to the said adjacent surface of said mass and said base plate;

(g) resilient means positioned between the surface of said mass opposite said member and said housing for continuously urging said mass against said member;

(h) the lower portion of said housing is cylindrical; and

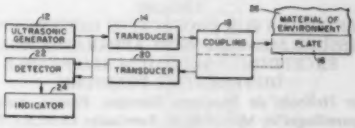
(i) the upper portion of said housing is conical.

4,461,178

ULTRASONIC AIRCRAFT ICE DETECTOR USING FLEXURAL WAVES

Jacques R. Chamuel, Framingham, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Apr. 2, 1982, Ser. No. 364,902
Int. Cl.³ G08B *19/02*; G01N *29/00*
U.S. Cl. 73—599 **21 Claims**



1. A system for detecting the presence of ice and water on a thin-walled surface comprising:

means for generating a signal;

a transmitting transducer producing an acoustic signal according to said generated signal;

means for coupling said acoustic signal to said thin-walled surface providing acoustic signal propagation thereon in at least two modes:

a receiver transducer providing an electrical signal corresponding to a received acoustic signal;

means for coupling said receiver transducer to said thin-walled surface, coupling the propagated acoustic signal to said receiver transducer;

receiver means providing a first and a second signal, each signal corresponding to a different mode of propagation of said acoustic signal;

means for providing a signal corresponding to a ratio between the amplitudes of said first and said second signal; and

indicator means for providing an alarm signal when the signal provided by said ratio signal means exceeds a predetermined threshold indicating the presence of one of ice and water on said thin-walled surface.

4,461,179

DEVICE SENSITIVE TO PRESSURE WAVES

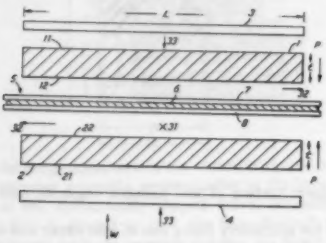
Lyn Holt, Maidenhead, England, assignor to EMI Limited, Hayes, United Kingdom

Filed Feb. 5, 1982, Ser. No. 346,200

Claims priority, application United Kingdom, Feb. 6, 1981, 81 03464

Int. Cl.³ H01L *41/18*

U.S. Cl. 73—658 **7 Claims**



1. A device sensitive to pressure waves comprising first and second planar sheets of polyvinylidene flouride supported in spaced apart relationship, each sheet being poled along a direction normal to the major faces of the sheets so as to be more sensitive to pressure waves incident thereon along said normal direction than to pressure waves incident thereon along other directions;

electrical connections being made to the respective faces of the sheets and associated electrical circuitry being provided to cancel substantially differences of voltage developed across the said major faces as a result of flexure of the sheets and to allow differences of voltages, otherwise developed across said major faces, as a result of pressure waves incident on the sheets along said normal direction, to be detected.

4,461,180

APPARATUS FOR PROTECTING DIFFERENTIAL PRESSURE MEASUREMENT APPARATUS AGAINST EXCEEDING A MAXIMUM ALLOWABLE DIFFERENTIAL PRESSURE

Olivier Hellouin de Menibus, Etampes, France, assignor to Appareillages et Materiels de Servitudes (A.M.S.), Fresnes, France

Filed Jan. 26, 1982, Ser. No. 342,731

Claims priority, application France, Jan. 27, 1981, 81 01436

Int. Cl.³ G01L *19/06*

U.S. Cl. 73—706 **22 Claims**

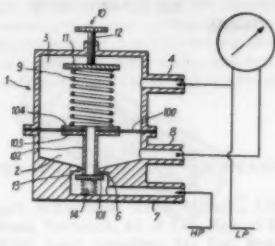
1. An apparatus for protecting a pressure differential sensor against exceeding a maximum allowable pressure differential comprising:

(a) a housing having a low-pressure chamber which includes a low-pressure inlet orifice for connection with a low-pressure line which is fed into the sensor, and a high-pressure chamber which includes both a high-pressure inlet orifice for connection with a high-pressure line and a high-pressure outlet orifice for connection with the sensor;

(b) a pressure-sensitive member separating said low-pressure and high-pressure chambers from one another;

(c) blocking means for regulating fluid flow through said high-pressure inlet orifice;

(d) back-pressure means for biasing said pressure-sensitive member towards said high-pressure chamber and for biasing said blocking means away from said high-pressure inlet orifice by applying a back pressure which is substantially equal to the maximum pressure differential whereby said high-pressure inlet orifice is unblocked when the pressure differential between the high-pressure and low-pressure lines does not exceed the biasing pressure applied by said back-pressure means, and whereby when the pressure differential between the high-pressure and low-pressure lines exceeds the biasing pressure of said back-pressure means, said blocking means blocks said high-pressure inlet orifice; and



(e) valve means for regulating the fluid flow between said high-pressure chamber and said low-pressure chamber, said valve means being biased closed by said back-pressure means when the differential pressure between the high-pressure and the low-pressure lines does not exceed the biasing pressure applied by said back-pressure means, and adapted such that it cannot be opened unless said high-pressure inlet orifice is blocked by said blocking means.

4,461,181

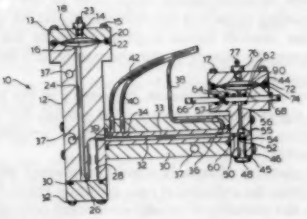
CONTROL FOR SAMPLE VOLUME METERING APPARATUS

Howard L. North, Jr., Newfoundland, N.J., assignor to Becton Dickinson and Company, Paramus, N.J.

Filed Jan. 6, 1983, Ser. No. 456,175

Int. Cl.³ G01L *7/18;* H01H *29/28*

U.S. Cl. 73—749 **9 Claims**



1. Manometer apparatus for metering successive equal quantities of a liquid suspension through instrumentation to which the manometer is connected, comprising

(a) a housing with a vent opening at one end and a sample connection opening at the other end;

(b) a passage in said housing extending from said vent opening to said sample connection opening;

(c) a vertical mercury supply well in said passage adjacent said sample connection opening;

(d) a substantially horizontal metering chamber in said passage defined by spaced apart start and stop electrodes positioned at the ends thereof; the improvement characterized by

(e) a stretchable mercury impermeable, gas permeable dia-

phragm in each of said vent and sample connection openings;

(f) said diaphragms being impermeable to sulfur containing gases;

(g) leads for connecting said start and stop electrodes to instrumentation to which said manometer is to control;

(h) said wire leads being simple wire leads extending to the axis of said metering chamber for engaging a mercury meniscus passing therethrough, and

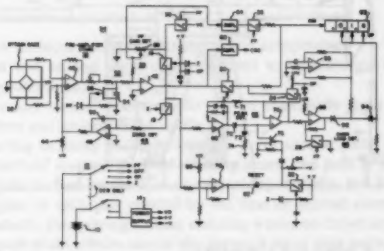
(i) said metering chamber being of a preset dimension between said start and stop electrode.

4,461,182

LOAD MEASURING APPARATUS

Clarence O. Jones, Jr., Buffalo, and William E. Vosteen, Waterport, both of N.Y., assignors to Niagara Machine & Tool Works, Buffalo, N.Y.

Filed Jul. 23, 1982, Ser. No. 401,070
Int. Cl.³ G01D *1/12*; G01L *1/00*
U.S. Cl. 73—862.53 **9 Claims**



5. For use in apparatus for measuring loads which vary during an operational cycle, and responsive to an output signal from a sensing device connected to a load carrying member and having means for amplifying said signal, peak detector means for providing an output signal representing the peak value of the load, means for indicating said peak value, means for setting said apparatus to produce a zero indication from said indicating means prior to an operating cycle, and means for calibrating said apparatus, the improvement which comprises switching means including a plurality of solid stage switches connected to said zero setting means, said peak detector meand and said calibrating means for selectively providing for non-interfering zero setting, calibrating and operating modes of said apparatus.

4,461,183

AMBIENT AEROSOL SAMPLER INLET

James B. Wedding, 2128 Sandstone Dr., Fort Collins, Colo. 80524

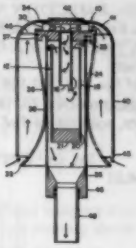
Filed Mar. 5, 1982, Ser. No. 354,940
Int. Cl.³ G01N *1/02*; B01D *45/12*
U.S. Cl. 73—863.21 **18 Claims**

1. An ambient aerosol sampling device, comprising:

cyclonic particle fractionating means including an elongated middle tube having a closed bottom and an open top and an elongated inner tube having an inlet and an outlet and having a diameter smaller than said middle tube, said inner tube positioned at least partially inside of said middle tube and extending through said open top with said outlet located interiorly of said middle tube to define an annular outlet opening for said middle tube at the open top thereof, said particle fractionating means for separating solid particles from a stream of air moving through said inner and middle tubes;

an elongated outer tube positioned concentrically around and extending upwardly above said middle tube, and plug means in the top of said outer tube above said middle tube for sealing the region between the top of said outer tube and the inlet of said inner tube;

air flow exhaust means in fluid communication with the interior of said outer tube for drawing off a flow of air passing through said inner, middle, and outer tubes; and



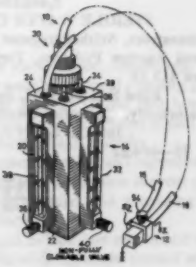
air directing means for introducing a stream of air into said inlet whereby said air flow is caused to undergo vortical motion about the axis of said inner tube, said air flow passing through said air directing means, through said inner tube, through said middle tube and exhausting through said air flow exhaust means.

4,461,184

COMPRESSED BREATHING AIR SAMPLING DEVICE

Shri K. Gandhi, Toronto, and H. Dinsmore Madill, Brampton, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottowa, Canada

Filed Jul. 8, 1982, Ser. No. 396,189
Claims priority, application Canada, Jul. 10, 1981, 381505
Int. Cl.³ G01N *1/22*
U.S. Cl. 73—863.23 **16 Claims**



1. Apparatus for detecting presence and gathering samples of certain contaminants which may be present in a source of compressed gas to be analyzed, comprising:

flow control means for conveying gas from said source at selected rates of flow determined by selected needle shaped orifices placed within said flow control means, to a respective first and second tube means;

a unitary compact gas sample collection means comprising separate respective first and second gas sampling means, each fed respectively with gas by and only from the respective said first and second tube means;

said first gas sampling means comprising a first adjustable valve means for establishing a first rate of flow therein and a filter means for extracting certain contaminants from the gas flowing therethrough, in said first gas sampling means;

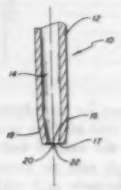
said second gas sampling means comprising a second adjustable valve means for establishing a second rate of flow

therein, and an outlet terminal means for selective attachment of a gas bag means thereto for gathering over time a sample of the gas flowing in said second gas sampling means.

4,461,185
INJECTION NEEDLE

Rainer Schoffel, Frickingen, Fed. Rep. of Germany, assignor to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen, Fed. Rep. of Germany

Continuation of Ser. No. 392,120, Jun. 25, 1982, abandoned. This application Oct. 28, 1982, Ser. No. 437,233
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1981, 3125321
Int. Cl.³ G01N *1/10*
U.S. Cl. 73—864.01 **2 Claims**



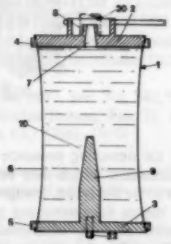
1. Needle for use in withdrawing a liquid sample from a closed sample vessel having a self-sealing diaphragm, said needle comprising:

a capillary tube having an aperture at one end thereof, which aperture communicates with a longitudinal passage through said tube, said one end being conically tapered at the outside, the interior of said capillary tube being conically tapered at said one end, said taper having a conus angle of about 22° and being such that the diameter of said aperture is about equal to half the diameter of said passage.

4,461,186
STERILE WATER COLLECTOR

Lars Brännström, Ståthållaregatan 5, Göteborg, Sweden (414 69), and Karsten Pedersen, Torlid Wulffsg. 36, Göteborg, Sweden 413 19

Filed Sep. 22, 1982, Ser. No. 421,163
Claims priority, application Sweden, Sep. 30, 1981, 8105564
Int. Cl.³ G01N *1/12, 1/14*
U.S. Cl. 73—864.62 **4 Claims**

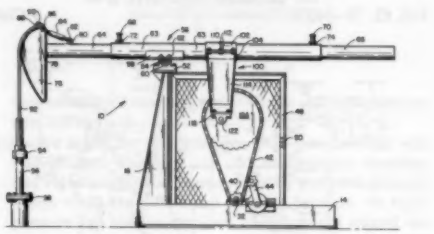


1. In a sterile water collector of the type comprising a sampling device and a sample receptacle, which is arranged to be activated by external actuation, whereby an inlet to the evacuated sample receptacle is opened, the improvement wherein the sample receptacle consists of a flexible wall structure located between two rigid end bodies, said bodies arranged upon activation of the sampling device to be displaced by means of an external force in a direction away from each other a certain distance, sample water thereby being sucked into the receptacle and wherein said rigid end bodies of the sample receptacle are an upper and a lower circular gable, the upper one of which is provided with a centrally located inlet, to the outer side of which is connected a flexible sampling tube, and wherein the lower gable is provided with a closing member projecting in a direction towards the inlet of the upper gable and adapted to extend into and seal off the inlet when the sample receptacle is in its evacuated position.

4,461,187
PUMP JACK

George E. Stanton, Orient, Ohio, assignor to NuJack Corporation, Columbus, Ohio

Filed Nov. 2, 1981, Ser. No. 317,700
Int. Cl.³ F16H *21/32, 19/06*
U.S. Cl. 74—41 **13 Claims**



1. A pump jack comprising:

a support structure;

a rocker arm pivotally mounted intermediate its ends on said structure, said rocker arm being divided by said pivoted mounting into a sucher-rod limb and a drive limb;

sucker rod attachment means disposed adjacent the end of said sucker-rod limb for attaching a sucker rod to said rocker arm;

a drive support member non-rotatably mounted on said rocker arm and having a lower end disposed beneath said drive limb of said rocker arm;

a circular driven member rotatably and eccentrically mounted on said drive support member;

a circular driving member mounted for rotation about its axis, said axis being fixed relative to said support structure;

drive means for rotating said driving member about its axis;

a flexible belt member engaging said driving and driven members such that said rotation of said driving member will cause the driven member to rotate about the point at which said driven member is mounted on said drive support member; and

means for adjusting the length of the sucker rod limb between the pivoted mounting and the sucker rod attachment means while maintaining the length of the drive limb constant,

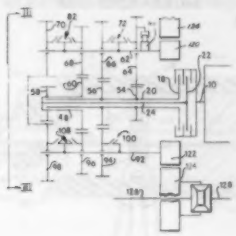
said sucker-rod limb of said rocker arm comprises a first, inner section, a second, outer section bearing said sucker rod attachment means and slideable relative to said first section along the length of said rocker arm, and locking means for releasably locking said second section in a fixed position relative to said first section,

said first section has the form of a hollow cylinder, said second section has the form of a cylinder slideable within the hollow interior of said first section and said locking means, when locked, extends through the wall of said first section and engages the cylindrical surface of said second section, thereby locking said two sections in position relative to one another.

4,461,188
DUAL CLUTCH MULTIPLE COUNTERSHAFT TRANSMISSION

Alan R. Fisher, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 23, 1981, Ser. No. 333,848
Int. Cl.³ F16H 3/08
U.S. Cl. 74—330 7 Claims



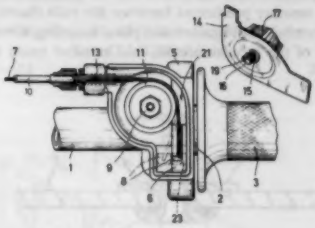
1. A multiple speed ratio transmission comprising:
first and second input shafts adapted to be clutched to a power source;
first and second countershafts driven selectively from the first and second input shafts;
gearing defining multiple forward drive torque paths that include multiple pairs of meshing gears, one gear of each pair carried by the first or second input shafts, the other gear of each pair carried by the first or second countershafts, the gearing further defining a reverse drive torque path that includes one of the forward drive gear pairs and a reverse drive output gear meshing with one of the gears of said forward drive gear pair, each of the gears of the reverse drive torque path transmitting torque to each gear with which it meshes;
synchronizer clutch means for selectively driveably connecting at least one gear of each forward drive torque path to its associated shaft and for connecting two gears of the reverse drive torque path to their associated shafts; and
means for alternately driveably connecting the first input shaft to the power source and disconnecting the second input shaft from the power source and for driveably connecting the second input shaft to the power source and disconnecting the first input shaft from the power source.

4,461,189
GAS TWIST GRIP FOR HANDLEBARS OF MOTOR-DRIVEN TWO-WHEELED VEHICLES

Ludwig Rottenkolber, and Karl Autenrieth, both of Urach, Fed. Rep. of Germany, assignors to Gustav Magenwirth GmbH & Co., Urach, Fed. Rep. of Germany

Filed Mar. 25, 1981, Ser. No. 247,282
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1980, 3013008
Int. Cl.³ G05G 11/00
U.S. Cl. 74—489 7 Claims

1. A twist gas grip for the handlebar of a motor-driven two-wheeled vehicle including in combination a tube rotatable on said handlebar, a housing secured to said handlebar for restraining said tube against movement in the direction of the axis of said handlebar, a bowden cable, a cable-receiving drum carried by said tube for movement therewith, a cable return roll separate from said drum, means mounting said return roll for rotary movement to guide said cable for movement out of said housing in a direction parallel to an axis of the handlebar, said housing being formed with a continuous slit open at the top of said housing to permit insertion of said cable from

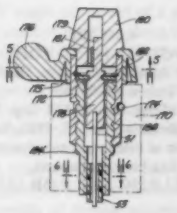


above, placing it on said roll and hanging it on said drum, and a detachable lid for closing said housing above said return roll.

4,461,190
GEAR OPERATED REMOTE CONTROL MIRROR AND OPERATIVE CONTROL

Walter C. Bramer, Norton Shores, Mich., assignor to Lacks Industries, Inc., Grand Rapids, Mich.

Filed Nov. 30, 1981, Ser. No. 325,985
Int. Cl.³ F16C 1/10
U.S. Cl. 74—501 M 9 Claims



1. A remote control rear view mirror, comprising;
a housing having a rearwardly disposed opening provided therein and a trunnion support within said housing for receiving and supporting a mirror member in said opening and providing an adjustment axis therefor,
a mirror supporting member received and supported in said trunnion support and having a trunnion support provided thereon for the mirror member and providing another adjustment axis therefor,
a mirror member engaged in said last mentioned trunnion support and having the viewing angle thereof adjustable in relative movement afforded by said first and second mentioned trunnion supports,
control means operatively engaged to said mirror member and mirror supporting member and including a single wire cable member having a protective sheath provided thereabout and means for selectively and individually actuating both said wire cable and said sheath in the operative control and adjustment of said mirror member within said trunnion supports.

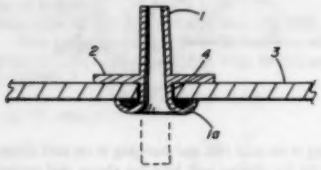
4,461,191
METHOD OF PREPARING BUSHING TIPS

Eugene G. Palamara, Butler, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 3, 1983, Ser. No. 463,415
Int. Cl.³ B21K 5/20
U.S. Cl. 76—107 S 6 Claims

1. A method of preparing a bottom plate for a bushing with

a plurality of precisely defined nozzles or tips comprising drilling a plate defining the bottom of the bushing with a plurality of holes to accommodate the desired number of nozzles, inserting in each of said holes a hollow tubular nozzle having a flange member positioned between the ends thereof until the flange member abut against said plate, inserting a mandrel into one end of the tubular nozzle, said mandrel being tapered so



that upon insertion it expands the tubular nozzle in all directions, applying sufficient pressure to the mandrel to roll the tubular nozzle walls onto said plate while maintaining sufficient pressure against said plate by the walls of said nozzle to establish a firm bond, and heating the plate to an elevated temperature for a period of time sufficient to effectively seal the metal plate to the nozzle wall.

4,461,192

PIVOT TIP HAND TOOL

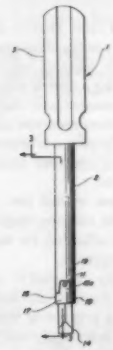
Diane Suligoy, R.R. 5, Mound Rd., Joliet, Ill. 60436, and Sharon Cook, 9704 Stacy, Union, Ill. 60180

Continuation-in-part of Ser. No. 73,159, Sep. 7, 1979, Pat. No. 4,271,731. This application Mar. 23, 1981, Ser. No. 246,451

The portion of the term of this patent subsequent to Jun. 9, 1998, has been disclaimed.

Int. Cl.³ B25G *1/00*; B25B *13/00*

U.S. Cl. 81—177 ST **11 Claims**



1. A pivot tip tool, comprising a hand grasp member, an elongated work-piece shaft extending from said hand grasp member and terminating in a first end, a pivot tip member pivotally connected to said first end of said work-piece shaft and pivotable between a first working position in a axial alignment with said shaft and a second working position substantially normal to said shaft, an elongated member slidably mounted on said work-piece shaft and slidable between a first rearward position relative to said shaft and a second forward position relative to said shaft, and lock means to lock said pivot tip member in at least one of said positions.

4,461,193

HANDLING PLIERS

Alexandre Gruber, and Anne B. Gruber, both of 23, Blvd. Pasteur, 51100 Reims, France

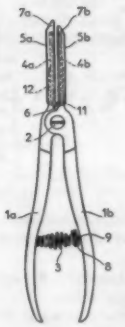
PCT No. PCT/FR80/00182, 371 Date Aug. 6, 1981, 102(e) Date Aug. 6, 1981, PCT Pub. No. WO81/01814, PCT Pub. Date Jul. 9, 1981

PCT Filed Dec. 16, 1980, Ser. No. 293,624

Claims priority, application France, Dec. 21, 1979, 79 31635

Int. Cl.³ B25B *7/02*

U.S. Cl. 81—420 **12 Claims**



1. A pliers for handling flat and thin objects comprising:

first and second plier elements each having a handle portion and a substantially flat jaw portion, said first and second plier elements being pivotally joined so that the respective substantially flat jaw portions thereof can mate when in a closed position; and

a flexible claw assembly including first and second claws joined together by a hinge, said first and second claws being configured, respectively, to be carried by and to be disposed between said substantially flat jaw portions of said first and second plier elements, said hinge being disposed adjacent to said pivotal joining of said first and second plier elements when said first flexible claw assembly is positioned on said plier elements, said hinge serving as a stop to limit the distance an object can be inserted between said substantially flat jaw portions, said flexible claw assembly being fixed in position on the jaw portions of said first and second plier elements by a turned down edge disposed on the outer face of said first and second claws.

4,461,194

TOOL FOR SEALING AND ATTACHING A LEAD TO A BODY IMPLANTABLE DEVICE

Gary L. Moore, Brooklyn Park, Minn., assignor to Cardio-Pace Medical, Inc., Minneapolis, Minn.

Filed Apr. 28, 1982, Ser. No. 372,634

Int. Cl.³ B25B *13/48*

U.S. Cl. 81—436 **18 Claims**

1. An apparatus for attaching and sealing a lead to a body implantable device, the device having a bore exposing a terminal portion of the lead and a terminal block for connection of the lead and the terminal block, the apparatus comprising:

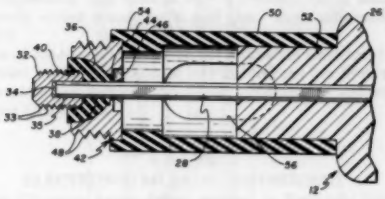
a handle portion;

first wrench means fixedly attached to the handle portion and having a shaft and a free end for transmitting rotational force from the handle;

a set screw detachably mounted on the free end for rotation by the first wrench means and having external threads for engaging the bore, as the set screw is rotated by the first wrench means and having an end for engaging the terminal portion of the lead;

deformable sealing means positioned adjacent the set screw on the first wrench means for sealing the bore to prevent exposure of the set screw to body fluids, the deformable sealing means having an axial passage through which the shaft extends and having a set screw engaging recess for frictionally holding the set screw;

cap means positioned on the shaft of the first wrench means adjacent the deformable sealing means on a side opposite from the set screw, the cap means having an axial passage



through which the shaft passes and having external threads for engaging the bore, the cap means applying pressure to the deformeable sealing means when fully threaded into the bore to cause the deformable sealing means to seal the bore; and

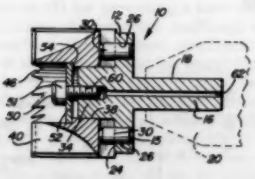
means for transmitting rotational force from the handle portion to the cap means to cause partial threading of the cap means into the bore as the set screw is threaded into the bore by the first wrench means.

4,461,195

MULTI-MACHINE CUTTER HOLDER

John F. Barnick, 4101 W. 150th St., Cleveland, Ohio 44135

Filed Mar. 26, 1982, Ser. No. 362,141
Int. Cl.³ B23B *29/00*
U.S. Cl. 82—36 R **9 Claims**



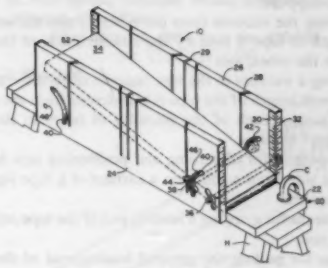
1. A holder device for holding in a jaw chuck and the like, a rotary work tool having a circular base defining a central opening and symmetrically disposed key slots extending radially from said opening, the holder device comprising a substantially circular flange with opposite surfaces, a support shaft extending axially from one surface of the flange for receipt in the jaw chuck and the like, a hub extending axially from the opposite surface of the flange for receipt in the central opening of said work tool, the hub including a threaded bore for receiving a screw to attach the work tool to the holder device, and abutment members projecting from said opposite surface of the flange, the abutment members being disposed symmetrically about the hub for receipt in the key slots of the work tool.

4,461,196

MITRE BOX SYSTEM FOR CUTTING COMPOUND ANGLES

William M. Schramm, II, 373 Mountain Rd., Pasadena, Md. 21122

Filed Sep. 29, 1982, Ser. No. 428,135
Int. Cl.³ B27G *5/02*
U.S. Cl. 83—13 **2 Claims**



2. In a mitre box system method for cutting a compound angle on molding for a 90° wall corner with one wall upslant, without angular measurement and layout, the steps comprising:

(a) cutting a 45° angle on an end of a piece of molding;

(b) placing the piece of molding along the top of one wall of the corner with the 45° cutout in the corner;

(c) placing a level of a known length in a level position below said upslant with a first end of the level against said wall in the corner beneath said piece of molding;

(d) measuring the vertical linear distance from the second end of said level to the upslant;

(e) providing a slotted mitre box with pivoted-rising-bed of the same length from pivot to free end as the length of said level, and capable of pivotal adjustment from a position parallel with the mitre box base;

(f) adjusting the rising bed free end top surface a distance from the position of same when parallel with the base, equalling said vertical linear distance; and

(g) inserting said molding in the mitre box to an end adjacent said pivot and cutting said compound angle using said slots to guide a cutter, thereby cutting said compound angle.

4,461,197

METHODS OF AND APPARATUS FOR DISPENSING AND POSITIONING TAPE ONTO A SURFACE

Gary G. Seaman, Broomfield, Colo., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Dec. 24, 1981, Ser. No. 334,274
Int. Cl.³ B26D *7/06*
U.S. Cl. 83—152 **3 Claims**

1. A method of dispensing and positioning tape having an adhesive side from a roll onto a surface, which comprises the steps of:

(a) gripping a leading end of the tape adjacent to the roll;

(b) pulling the gripped leading end of the tape from the roll a selected distance to provide a selected length of tape;

(c) holding taut the selected length of the tape;

(d) gripping one side of the taut selected length of tape by means of:

moving a plurality of tubes attached to a position adjacent the adhesive side of the selected lenght of tape,

affixing the adhesive side of the selected length of tape to lower surfaces of each of the plurality of tubes, and

applying vacuum to each of the plurality of vacuum tubes;

(e) severing the gripped tautly-held tape so that the selected length of tape is separated from the roll; and

(f) transferring the severed length of tape to a surface so that the non-adhesive side of the tape is placed in engagement with the surface of a tape support where transferring includes the steps of:

moving the tubes having the severed length of tape affixed thereto to a position so that the non-adhesive side of the tape is placed in engagement with the surface of the tape support,

removing the vacuum from the tubes so that the selected length of tape is held by the adhesive side of the tape with the tubes, and

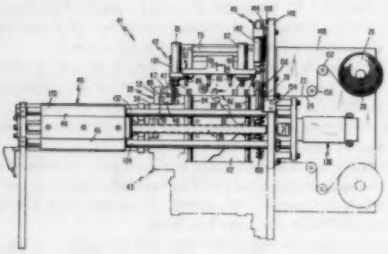
applying a vacuum to the tape support surface so that the severed length of the tape is transferred from the lower surfaces of each of the plurality of tubes to the tape support surface.

2. An apparatus for dispensing and positioning tape having an adhesive side from a roll onto a surface of a tape support, which comprises:

(a) first means for gripping a leading end of the tape adjacent to the roll;

(b) means for pulling the gripped leading end of the tape from the roll a selected distance to provide a selected length of tape;

(c) means for holding taut the selected length of the tape;



(d) second means for gripping one side of the taut selected length of the tape where the second means for gripping comprises:

a plurality of spatially arranged tubes,

means for moving the plurality of tubes to a position whereat lower surfaces of each of the plurality of tubes is affixed to the adhesive side of the selected length of tape, and

means for applying vacuum to each of the plurality of tubes;

(e) means for severing the gripped tautly-held tape so that the selected length of tape is separated from the roll; and

(f) means for transferring the severed length of tape to the surface of the tape support so that the non-adhesive side of the tape is placed in engagement with the surface of the tape support where the means for transferring comprises:

means for moving the tubes having the severed length of tape affixed thereto to a position so that the non-adhesive side of the tape is placed in engagement with the surface of the tape support,

means for removing the vacuum from the tubes so that the selected length of tape is held by the adhesive side of the tape with the tubes, and

means for applying a vacuum to the tape support surface so that the severed length of the tape is transferred from the lower surfaces of each of the plurality of tubes to the tape support surface.

4,461,198

SAWBLADE

Günther Grassmann, Eddesse, 3155 Edemissen 4, Fed. Rep. of Germany

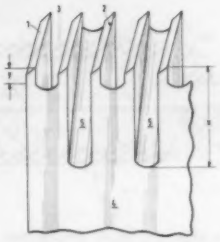
Continuation of Ser. No. 257,406, Apr. 24, 1981, abandoned.

This application Nov. 2, 1983, Ser. No. 548,229

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1980, 3016660

Int. Cl.[3] **B23D** *61/02;* **B27B** *33/08*

U.S. Cl. 83—835 **5 Claims**



1. A saw blade with fine teeth of a height which is within the range of the thickness of the blade and having cutting edges corresponding in width to the thickness of the blade, comprising chip spaces formed in interstices between respective teeth, the alternate chip spaces opening into opposite sides of the blade and having at its one side a depth corresponding to the height of the teeth and at its other side an inclined bottom sloping along a straight line from the depth of the one side and at an angle at which a maximum depth reaches the multiple of the height of the teeth, and the length of the chip spaces being considerably greater than their width.

4,461,199

ELECTRONIC MUSICAL INSTRUMENTS

Teruo Hiyoshi, Hamamatsu; Eisaku Okamoto, Hamakita; Eiichiro Aoki, Hamamatsu; Toshio Sugiura, Hamamatsu, and Koichi Kozuki, Hamamatsu, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

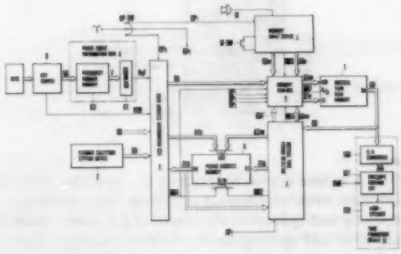
Continuation of Ser. No. 180,032, Aug. 21, 1980, abandoned.

This application Dec. 9, 1982, Ser. No. 448,367

Claims priority, application Japan, Aug. 31, 1979, 54-110240

Int. Cl.[3] **G10H** *1/02*

U.S. Cl. 84—1.19 **10 Claims**



1. An electronic musical instrument comprising a keyboard including a plurality of keys;

a musical tone data memory device for storing a plurality of different tone waveforms constituting a musical tone to be generated;

an address designation memory device for storing information that designates starting addresses of said waveforms stored in said musical tone data memory device;

a phase angle information generator for generating a phase angle information having a period corresponding to a tone pitch of a depressed key;

selection information setting means for manually setting a selection information adapted to designate a sequence of selected ones of said starting addresses;

said selection information being programmable by means of said selection information setting means;

read out information generating means for generating read-out address information for reading out sequentially each of said musical tone waveforms from said musical tone memory device according to said programmed selection information, said musical tone waveforms being successively varied according to said phase angle information; and

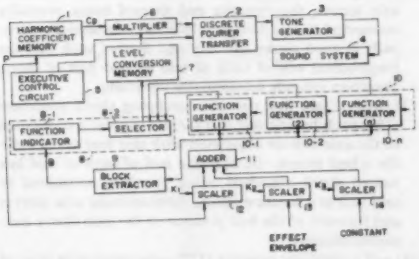
musical tone generating means for producing a musical tone based on the musical tone waveforms read out from said musical tone data memory device according to said selection information.

4,461,200

ELECTRONIC MUSICAL INSTRUMENT

Hiroshi Kitagawa, Iwata, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Japan

Filed Apr. 14, 1982, Ser. No. 368,143
Claims priority, application Japan, Apr. 17, 1981, 56-58167
Int. Cl.³ G10H *1/08, 7/00*
U.S. Cl. 84—1.21 **2 Claims**



1. An electronic musical instrument which produces a musical sound through calculating means of a discrete fourier algorithm by controlling harmonic coefficients, comprising:

a harmonic coefficient memory (1) for storing a set of harmonic coefficients, and having an output value;

control means (5) for generating a harmonic number value for addressing the harmonic coefficient memory to read out therefrom the harmonic coefficients as the output value of the memory, and for controlling an arithmetic operation of the discrete fourier algorithm;

adding means (11, 12, 13, 14) for adding together, in a predetermined ratio, the harmonic number value, more than one temporarily changing effect function values and a constant value, the adding means having an output value;

function converting means (8, 10) for converting an input value into plural kinds of functions and selecting a desired one of the functions, the function converting means having an output value;

block extracting means (9) for dividing the level of the input value into a plurality of blocks representing several levels and extracting one of the blocks corresponding to a level of the input value;

data conversion control means (7) for inputting the output value of the adding means to the function converting means and to the block extracting means, and for controlling the function converting means to assign a desired one of the functions of the function converting means to each of the plurality of blocks and to designate to the block of the extracted level the function preassigned to each block extracted by the block extracting means, thereby converting the input value into data of a function varying with the input level; and

multiplying means (6) for multiplying the output value of the harmonic coefficient memory and the output value of the function converting means;

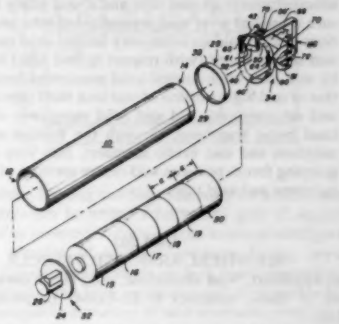
wherein the harmonic coefficients are controlled with time.

4,461,201

SAFETY CLOSURE LOCK

Peter H. Van Sloun, Hopkins, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 31, 1983, Ser. No. 480,969
Int. Cl.³ F41F *1/00*
U.S. Cl. 89—1 R **25 Claims**



1. In combination with a hollow right-circular cylindrically shaped canister tube adapted to be loaded with submunitions which in turn are adapted to be ejected by a propulsion charge in said tube from an open end thereof, a safety closure lock for said canister tube to prevent an ejection of said submunitions from said tube prior to an intended time, but to permit a partial limited axial movement of said submunitions from said open end of said tube, said safety closure lock comprising:

(a) a bridle assembly including:

(i) first and second bridle members each of which is an elongated strap having first and second ends and the middle section thereof being curved in a half-circular shape and of a diameter slightly greater than the diameter of said tube, and said straps further having said first and second ends thereof curved away from the plane defined by said half-circular shape, said first and second bridle members being pivotally connected together for limited rotational movement therebetween at first and second pivot points located intermediate the ends of said members and the planes defined by said half-circular shapes, and

(ii) first and second spring means each connected to both said bridle members and respectively spaced from said first and second pivot points;

(b) an "U" shaped lock band having a bight portion slightly longer than the diameter of said canister tube and first and second depending ends; and

(c) first and second pairs of link members connecting respectively said first and second depending ends of said lock band to said first and second ends of said bridle members, said link members being pivotally connected to said bridle members and said depending ends for limited rotational movement therebetween;

whereby said safety closure lock facilitates the following:

(1) application of the entire safety closure lock over a preassembled tube and submunitions so that, (i) the bight portion of said lock band is abutting said open end of said canister tube, (ii) the centers of said first and second bridle members are engaging diametrically opposite sides of said

tube at points axially spaced in from said open end thereof, whereat said spring means will draw said bridle members toward the exterior surface of said tube to provide a gripping action so that said safety closure lock will function both as a lock as aforesaid and also permit safe handling of said preassembled tube and submunitions, and so that following such handling the entire safety closure lock may be removed from said preassembled tube and munitions by application of an inward axial force to said bight portion of said lock band concurrently with an application of outward axial force to at least one of said bridle members at a point between said pivot points to thereby release the gripping of said tube by said bridle member, and

(2) safety for personnel handling a preassembled tube and submunitions so that, if a propulsion charge within said tube is unintentionally ignited so as to try to eject said submunitions from said tube and if said safety lock enclosure is applied over said preassembled tube and submunitions as aforesaid an initial very limited axial movement of said submunitions (with respect to said tube) is permitted by said lock, such limited axial movement being equal to that of said bight portion of said lock band (abutted against said submunitions) and said axial movement of said lock band being translated, through the linkage of said link members and said bridle members, into very substantial gripping forces between said center sections of said bridle members and said tube.

4,461,202

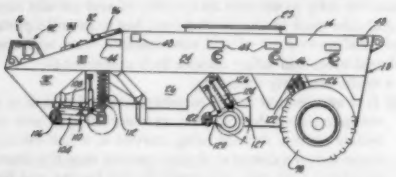
SIX-WHEEL ARMORED VEHICLE

Irving Appelblatt, West Bloomfield, and Peter Krawiecki, Utica, both of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Division of Ser. No. 182,254, Aug. 28, 1980, abandoned. This application Aug. 25, 1982, Ser. No. 411,152

Int. Cl.³ F41H *7/02*

U.S. Cl. 89—40 B **1 Claim**



1. A multi-axle armored vehicle comprising: a unitized hull constructed from armor plate and exhibiting ballistically-resistant, oblique surfaces over substantially the entirety thereof, said hull comprising a box-like personnel-carrying body portion and an integral, forwardly, inwardly tapering wedge-shape nose portion;

front axle means in the area of the nose portion and first and second parallel rear axle means in the area of the body portion;

suspension means mounting said front axle means to said hull;

each of said first and second parallel rear axle means having a power transfer differential, a drive shaft, and a pair of drive axles, housing means for said differentials, said drive shafts and said drive axles including first and second pairs of axle sleeves, said first and second pairs of axle sleeves each having a pair of outboard ends, suspension means including a pair of trailing swing arms on each side of the hull, each of said trailing swing arms connected at one end to one of the outboard ends of one of said axle sleeves, means for pivotally connecting the opposite end of each of said trailing swing arms to said hull for swinging movement in a vertical plane, spring means for suspending the hull on each of said trailing swing arms, vehicle wheels connected to each of said trailing swing arms for concurrent vertical planar movement whereby wheel suspension movements are maintained in a limited transverse space outboard of the vehicle hull;

said spring means including a first pair of telescoping shock absorbers (**124**) and a coil spring (**126**) surrounding each of said shock absorbers having its opposite ends supported by opposite ends of said shock absorbers, said opposite ends of said shock absorbers being connected at axially offset and vertically spaced points on said hull and said trailing arm whereby said shock absorbers and coil springs extend obliquely from said wheel assemblies toward said front end to reduce the vertical height of the wheel well occupied by said spring means;

an engine selectively drivingly connected to said drive shafts for powering said vehicle, said engine being disposed substantially within the nose of said hull and laterally from a longitudinal center line of said hull; and,

a driver's station spaced laterally from said engine and within the nose of said hull,

said hull is provided with a plurality of wheel wells therein above said vehicle wheels having a transverse width slightly wider than the treat width of each vehicle wheel, and

(1) each of said trailing swing arms being transversely spaced and having the opposite ends thereof pivotally connected to said hull at a location forward of the hull position of the axle sleeve connected thereto,

(2) a second pair of telescoping shock absorbers each having one end thereof pivotally connected to the front axle means, the opposite end thereof being pivotally connected to said hull at a location substantially vertically aligned above said one end thereof such that the longitudinal axis of each of said second pair of shock absorbers extends substantially vertically,

(3) each of said first pair of telescoping shock absorbers (**124**) each having one end thereof pivotally connected to the axle sleeves associated with said rear set of vehicle wheel means, the opposite end of each of said last named shock absorbers being pivotally connected to said hull at a location above the associated axle sleeves and forward of the hull position of the axle sleeve connected thereto.

(4) and a stabilizer member (**122**) associated with each of said first pair of shock absorbers (**124**) having opposite end thereof pivotally connected to said hull at a location below said last mentioned pivotally connected hull location whereby said stabilizer member has its longitudinal axis generally parallel to the longitudinal axis of said shock absorber **124** to efficiently utilize wheel well space occupied by the spring means at the rear set of vehicle wheel means.

4,461,203

BREECH-LOCKING MECHANISM FOR FIREARMS

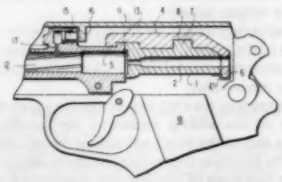
Nameer A. Jawdat, 8609 Brandt Pl., Bethesda, Md. 20814

Filed Jul. 8, 1982, Ser. No. 396,203

Claims priority, application Italy, Jul. 10, 1981, 48876 A/81

Int. Cl.³ F41D *3/00, 3/04, 5/12*

U.S. Cl. 89—154 **6 Claims**



1. A device for loading and firing a firearm having a barrel

(12) mounted in a frame, and a slide (11) reciprocally slidable on the frame in a horizontal path parallel to the longitudinal bore of the barrel, said device comprising:

a plurality of longitudinal grooves (3') in the slide;

a bolt (1) slidably mounted in said longitudinal grooves;

a yoke (4) coupled to the bolt for horizontal longitudinal movement therewith and for vertical movement relative thereto, said bolt being locked by said yoke to the breech of the barrel when the slide is in its forward firing position and the yoke is in its lower position; and

follower pin means (10) fixed to the slide and riding in corresponding cam groove means (9) in said yoke for imparting initial vertical upward movement to the yoke to unlock said bolt when the slide is retracted after firing.

4,461,204

ANTI-FREEZING DEVICE FOR PNEUMATIC TOOLS

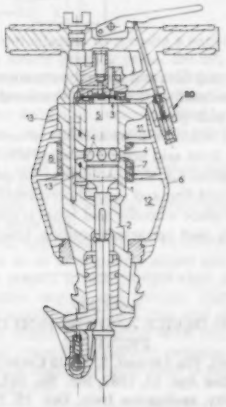
Henri Emonet, Loire, France, assignor to Maco Meudon, France

Filed Jul. 23, 1981, Ser. No. 286,112

Claims priority, application France, Jul. 25, 1980, 80 16750

Int. Cl.³ F01B *23/00*; F01L *25/02*

U.S. Cl. 91—55 **8 Claims**



1. An anti-freezing device for a pneumatic tool comprising a tool body, cylindrical cavity in said tool body, a piston movably disposed in said cylindrical cavity in said tool body, control distributor means interconnected with said cylindrical cavity, and exhaust apertures in said tool body, said exhaust apertures selectively interconnecting a portion of said cylindrical cavity with the ambient atmosphere, said anti-freezing device further comprising:

a sleeve of thermally insulating material wound around said tool body such as to surround at least said portion of said cylindrical cavity;

a silencer main body fitted over said tool body;

a first chamber in said silencer main body, said first chamber at least partially surrounding said portion of said cylindrical cavity;

opening means in said sleeve of thermally insulating material aligned with said exhaust apertures in said tool body such as to permit said cylindrical cavity to dispose of exhaust fluid therethrough into said first chamber in said silencer main body;

an exhaust channel formed in said silencer main body at a location remote from said tool body, said exhaust channel extending from said first chamber generally parallel to said cylindrical cavity and in a direction away from said control distributor means; and

a second chamber formed in said silencer main body, said second chamber being disposed between said exhaust channel and said tool body, said second chamber further being hermetically sealed such as to insulate said tool body from being cooled by the fluid exhausted by said pneumatic tool.

4,461,205

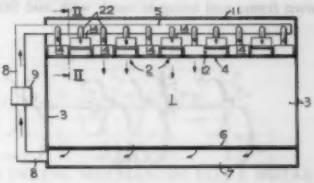
COMBINATION LIGHTING AND FILTERING UNIT FOR A CLEAN ROOM

Bernard R. Shuler, Anchorage, Ky., assignor to Allis-Chalmers Corp., Milwaukee, Wis.

Filed Jul. 30, 1982, Ser. No. 403,784

Int. Cl.³ F24F *7/00*; B01D *39/08, 50/00*; H01G *1/08*

U.S. Cl. 98—40 DL **7 Claims**



1. A modular lighting and filter assembly for a clean room in a ceiling structure including a horizontal grid of supporting members of an inverted T-shaped cross-sectional configuration forming a plurality of adjacent apertures having inwardly extending supporting lips about each of their peripheries and modular lighting and filter assemblies and filter units adapted for interchangeable mounting in said apertures, comprising:

a light housing having an upper opening and a lower opening interconnected by a gas passage extending through the housing;

said housing having lighting means supported within the gas passage and including a lower end sized and constructed to fit and mounted in one of said apertures in overlying seating relation to the respective lip of said aperture to support the housing within the grid;

first sealing means adapted to engage the housing about said lower opening and said respective lip to form a gas-tight seal about its associated aperture;

supporting means on said housing surrounding said upper opening; and

a filter unit of essentially the same lateral dimensions as said light housing having a second sealing means surrounding its bottom periphery sized and constructed and supportively received by said supporting means of said housing and in selective apertures to support each filter unit selectively on the housing and said aperture and form a gas-tight seal the filter unit.

4,461,206

CROWN STRUCTURE FOR A THREE-PILLAR TYPE PRESS

Kiyokazu Baba, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Sep. 14, 1982, Ser. No. 418,035

Int. Cl.³ B30B *7/00*

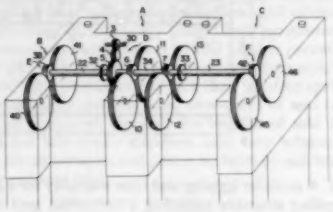
U.S. Cl. 100—208 **2 Claims**

1. A segmented crown structure for a three-pillar type press having a first and second slide, comprising:

a central crown including a central crown frame; drive means mounted on said central crown frame; first shaft means connected to and driven by said drive means, said first shaft having a first gear fixedly mounted thereon; second shaft means rotatably mounted on said central crown frame, said second shaft means having second, third and fourth gears fixedly mounted thereon with said second gear being operatively connected with said first gear; first, second, third and fourth main gears rotatably

mounted on said central crown frame with said first and second main gears being in mesh with said third gear and said third and fourth main gears being in mesh with said fourth gear, respectively; first and second connection rods each having one end connected to said first and second main gears respectively, and the other ends connected to said first slide; and third and fourth connection rods each having one end connected to said third and fourth main gears respectively, and the other ends connected to said second slide;

a left crown including a left crown frame; third shaft means rotatably mounted on said left crown frame, said third shaft means having a fifth gear fixedly mounted thereon; fifth and sixth main gears rotatably mounted on said left crown frame and being in mesh with said fifth gear; and



fifth and sixth connection rods each having one end connected to said fifth and sixth main gears respectively, and the other ends connected to said first slide;

first coupling means for coupling said second shaft means with said third shaft means;

a right crown including a right crown frame; fourth shaft means rotatably mounted on said right crown frame, said fourth shaft means having a sixth gear fixedly mounted thereon; seventh and eighth main gears rotatably mounted on said right crown frame and being in mesh with said sixth gear; and seventh and eighth connection rods each having one end connected to said seventh and eighth main gears respectively, and the other ends connected to said second slide; and

second coupling means for coupling said second shaft means with said fourth shaft means.

4,461,207

ACTUATOR MECHANISM FOR A PRINTER OR THE LIKE USING DUAL MAGNETS

Edward F. Helinski, Johnson City, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 207,503, Nov. 17, 1980, abandoned. This application Jan. 31, 1983, Ser. No. 462,638

Int. Cl.³ B41J *9/38*

U.S. Cl. 101—93.48 **19 Claims**

1. A hammer mechanism for a device such as a printer comprising

a magnetic hammer element comprising an elongated relatively flat beam of resilient material having a relatively small uniform thickness between first and second opposite surfaces and having a fixed end and an opposite deflectable free end and including an impact element extending from said first surface of said beam in the vicinity of said free end,

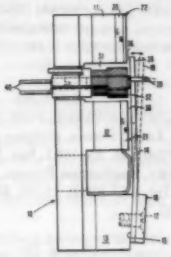
said beam being mounted at the fixed end so as to assume a relatively straight configuration defining a neutral position when not flexed,

magnetic circuit means including permanent magnet means and a magnetic core means disposed adjacent said second surface of said beam in the vicinity of said free end thereof so as to be coupled in magnetic circuit with an end portion of said beam immediately adjacent said free end,

said magnetic core means includes first, second, and third pole pieces spaced from each other along said end portion of said beam, said third pole piece being located between said first and second pole pieces,

said permanent magnet means comprises first and second permanent magnets supported by said first and second pole pieces adjacent said end portion of said beam with said third pole therebetween,

said first and second permanent magnets having the same polarity and establishing first and second magnetic fields in the vicinity of said end portion of said beam whereby



flux from said first and second permanent magnets flows through said end portion of said beam and returns through said third pole piece,

said first and second magnetic fields retracting and holding said beam from said neutral to a retracted position, and

means coupled to said third pole piece for counteracting said flux from said first and second permanent magnets in said third pole piece whereby said beam is released for movement from said retracted position toward said neutral position.

4,461,208

WETTING DEVICE AND METHOD IN OFFSET PRINTING

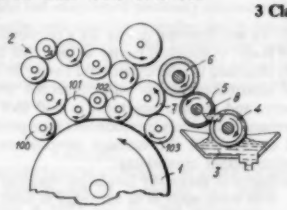
Luigi Ghisalberti, Via Abruzzi, 3, 24035 Curno (Bergamo), Italy

Filed Apr. 12, 1982, Ser. No. 367,328

Claims priority, application Italy, Dec. 15, 1981, 2936 A/81

Int. Cl.³ B41F *7/26, 7/36, 7/32*

U.S. Cl. 101—148 **3 Claims**



1. A wetting method for applying a water-alcohol-ink mixture to a printing plate in offset printing, the method comprising: a first preliminary wetting step in which an alcohol-water solution is directly supplied to a supply roller and a transfer roller, the transfer roller being in contact with a further resilient and separable roller performing the function of a metering roller, said metering roller being at that time in contact with a first vibrating roller of a vibrating battery, whereby the solution is transferred to the vibrating battery, and at the same time a pigment is applied to said vibrating battery, whereby the pigment and solution are mixed by the vibrating battery; a second step in which inking rollers, which are in contact with the vibrating battery, are brought into contact with the plate, thereby delivering the water-alcohol-ink mixture to the plate; and a third step in which the inking rollers are moved away

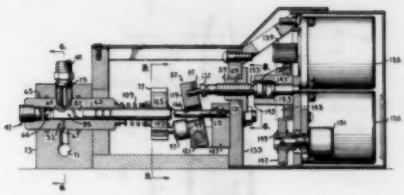
from the plate and the metering roller is moved away from the transfer roller.

4,461,209

INK PUMP WITH POSITIVE ZERO SET

Bohdan Washchynsky, Overland Park, Kans., and Ralph L. Fusco, Commack, N.Y., assignors to Smith R.P.M. Corporation, Overland Park, Kans.

Filed Jul. 13, 1982, Ser. No. 397,689
Int. Cl.³ B41F *31/08*; B41L *27/10*
U.S. Cl. 101—219 **12 Claims**



1. In an ink pump adapted to provide a supply of ink to an inking train of a rotary printing press, the ink pump having individual pumping units comprising an elongate plunger shaft having an axis thereof, a first end of which is positioned within an enclosed sleeve defining a pump chamber having inlet and outlet ports therto, and including means to rotate said plunger shaft, the improvement comprising:

(a) said plunger shaft having sliding shoe means positioned near a second end thereof;

(b) a wobble plate having a planar surface angled relative to said plunger shaft axis;

(c) wobble plate adjustment means to cooperate with said wobble plate so as to angularly adjust said wobble plate surface with respect to said plunger shaft axis; and

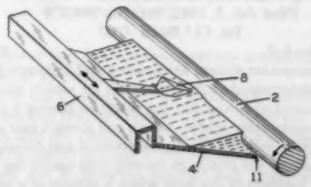
(d) biasing means urging said plunger shaft shoe means toward said wobble plate such that said shoe means are continuously biased into contact with said wobble plate when said ink pump is oppratively pumping, whereby said plunger shaft is urged to reciprocate in said sleeve upon the rotation thereof.

4,461,210

WEDGE SHAPED INK AGITATOR FOR PRINTING PRESSES

John MacPhee, Rowayton, Conn.; C. Robert Gasparrini, Rye, N.Y., and David Wirth, West Redding, Conn., assignors to Baldwin-Gegenheimer Corporation, Stamford, Conn.

Continuation of Ser. No. 318,431, Nov. 5, 1981, abandoned. This application Aug. 25, 1983, Ser. No. 526,229
Int. Cl.³ B41F *1/40*
U.S. Cl. 101—363 **12 Claims**



1. A non-rotating one-piece ink agitator for use in an ink fountain having an ink fountain blade with a substantially flat upper surface and an ink fountain roller, said ink agitator being adapted to be reciprocated back and forth in the ink fountain along the length of the ink fountain roller comprising:

(a) a substantially flat bottom base surface in close proximity to the upper surface of the ink fountain blade; said base surface being relatively wide at one end and narrowing to a relatively narrow portion adjacent the ink roller;

(b) a pair of side surfaces extending upwardly and outwardly from said bottom surface thereby forming a plow angle between the bottom surface and said side surfaces;

(c) a top surface extending between the edges of said side surfaces;

(d) said bottom surface, said side surfaces and said top surface forming an isosceles trapezoid when viewed in vertical section and having an area which is smallest adjacent the ink roller and gradually increases as the vertical section is taken in planes spaced from the ink roller, and

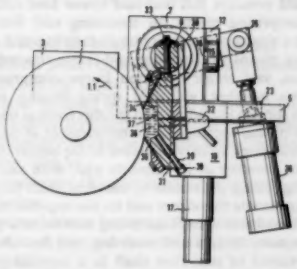
(e) said side surfaces being tapered towards the ink roller thereby forming a cone angle.

4,461,211

FLUSH INKING MECHANISM FOR A ROTARY PRINTING PRESS

Heinz Wesselmann, Tecklenburg, and Walter Wessel, Lengerich, both of Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Jul. 27, 1982, Ser. No. 402,345
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1981, 3129951; Sep. 9, 1981, 3135711
Int. Cl.³ B41F *31/04, 31/08*; B41L *27/06*
U.S. Cl. 101—366 **8 Claims**



1. A flush inking mechanism for a rotary press, comprising:

an ink applicator roller;

a doctor blade holder pivotable about an axis above and parallel to the applicator roller axis by a piston-cylinder unit acting on the doctor blade holder;

an ink distributing channel formed in and extending along one side of said doctor blade holder;

an ink supply conduit in communication with said ink distributing channel;

means for collecting ink flowing out of the ends of said ink distributing channel,; and

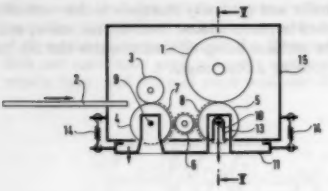
said doctor blade holder including a first doctor blade and a second doctor blade, each of which extends outwardly from said blade holder and can be applied against the surface of the ink applicator roller, said doctor blade holder being pendulatingly secured to a shaft the axis of which defines said pivot axis, said doctor blades being laterally supported on the surface of the applicator roller and defining sides of an ink cavity with said applicator roller and said doctor blade holder, one of said doctor blades having a greater flexibility than the other to permit compensation for misalignment of said doctor blade holder relative to said ink applicator roller.

4,461,212

DRIVE AND PRINTING MECHANISM FOR A FRANKING MACHINE

Christian Geney, Clichy, France, assignor to SMH Alcatel, Paris, France

Filed Dec. 13, 1982, Ser. No. 449,342
Claims priority, application France, Jan. 12, 1982, 82 00343
Int. Cl.³ B41F *13/34*
U.S. Cl. 101—407 R **3 Claims**



1. A drive and printing mechanism for a document franking machine, said mechanism comprising: a stationary chassis, a printing cylinder with printing characters on its periphery, means for mounting said printing cylinder on the stationary chassis for rotation about a fixed horizontal axis, a pressure roll for co-operating with the printing cylinder, said pressure roll being mounted on a first shaft together with a first toothed ring, a drive gear wheel on a horizontal shaft mounted for rotation on said stationary chassis, upper and lower co-operating document feed rolls, the lower feed roll being mounted on a second shaft together with a second toothed ring, said drive gear wheel being in mesh with said first and second toothed rings to drive said pressure roll and said lower feed roll, the improvement comprising means for mounting said first and second shafts on a single common frame underlying said chassis, spring biasing means for drawing said frame towards the stationary chassis, said single common frame comprising a rectangular frame member, and said spring biasing means comprising three springs including two springs fixed at one end to opposite sides of said rectangular frame member at one end thereof and a third spring fixedly mounted to the center of said rectangular frame member at its opposite end, with said first and second springs being proximate to said first shaft and said third spring being remote therefrom and on the opposite side of said second shaft, and said chassis including two narrow guide slots on opposite sides thereof and receiving said first shaft so as to limit movement of said first shaft in a vertical plane; whereby, via said three spring coupling, both said pressure roll and said lower feed roll may tilt in the vertical plane of movement of their axes to readily compensate for documents of uneven thickness over their width transverse to their directiion of movement in passing through the drive and printing mechanism.

4,461,213

LUMINOUS AUTODISPERSABLE PYROTECHNIC DEVICE

Lucien Autret, Saint-Sauveur, and Jean-Philippe Godfrin, Plougastel Daoulas, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Nov. 3, 1982, Ser. No. 439,031
Claims priority, application France, Nov. 10, 1981, 81 20996
Int. Cl.³ F42B *4/02*
U.S. Cl. 102—335 **17 Claims**

1. An illuminating pyrotechnic device consisting of a shell containing a block of pyrotechnic composition consisting of at least one polymerized binder, an oxidizer and a combustible metal, wherein the pyrotechnic composition is prepared from a binder of the phenoplastic type and an oxidizer, the granulometry of which is lower than 150 micrometers, and the smallest dimension of the block is greater than 15 mm, the block having undergone a rapid cooling after polymerization whereby internal strains are created and fracture points are formed within the composition, so that said composition explodes immediately after the pyrotechnic device is ignited.

4,461,214

CARTRIDGE LOADED HYBRID PROPELLANT

William L. Black, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 24, 1982, Ser. No. 391,263
Int. Cl.³ F42B *5/02*
U.S. Cl. 102—440 **1 Claim**

1. A round of ammunition comprising:
a case including a body, a neck and a case head;
ignition means mounted in said case head;
a projectile retained in said neck having a base to define a propellant storage volume within said case body in communication with said ignition means;
a frangible, toric-shaped, flexible bag positioned with the outer wall thereof in contact with the inner walls of said propellant storage volume of said case and the central void thereof in alignment with said ignition means;
a solid propellant housed within said propellant storage volume and in communication with said ignition means and substantially filling the central void of said frangible, toric-shaped, flexible bag; and
a predetermined quantity of hydroxylammonium nitrate ($HONH_3^+NO_3^-$) within said frangible, toric-shaped, flexible bag, whereby ignition of said ignition means causes said solid propellant to be ignited and to rupture said bag for ignition of the contents thereof.

4,461,215

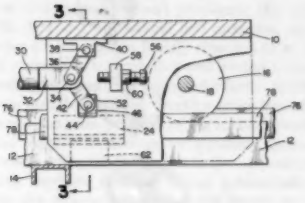
TRANSPORTING SYSTEM FOR ROBOT

Terence B. H. Sims, Detroit, Mich., assignor to Superior Robotic Transporters, Inc., Livonia, Mich.

Filed Jul. 2, 1982, Ser. No. 394,978
Int. Cl.³ B61K *7/00*
U.S. Cl. 104—1 R **4 Claims**

1. In a transporter system for guiding and conveying a load along a predetermined path, a platform on which the load is precisely located and mounted, the platform having a plurality of platform-supporting wheels which roll along a pair of laterally spaced path-defining tracks, the position and dimensions of the tracks lacking the precision necessary to assure the desired accuracy of location of the load when it arrives at a predetermined station along the path, the improvement which comprises:
platform lifting means mounted on the platform and adapted to lift the platform off the tracks after the platform has been approximately prepositioned at a predetermined station;
locator block means precisely dimensioned and fixedly posi-

tioned at said station to the desired degree of accuracy, said locator block means having an underside with a downwardly facing surface which is engageable by an upwardly facing surface fixedly secured to and positioned beneath said platform, said engageable surfaces being precisely located and dimensioned whereby upward travel of said platform during platform lifting causes said surfaces to abut and firmly seat against each other when said platform has reached a precise predetermined elevation;



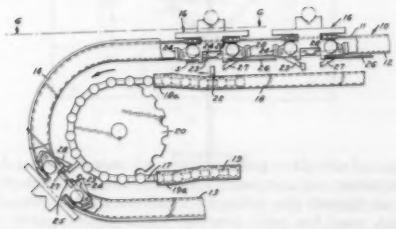
said engageable surfaces including cooperating inclined ramp-like formations which initially engage each other only after said platform has been lifted off the tracks during upward movement of said platform, said ramp-like formations camming said platform in a horizontal direction relative to the tracks as said platform rises, to eliminate any undesired inaccuracy in the horizontal pre-position of said platform prior to said platform reaching its predetermined elevation.

4,461,216

OVER AND UNDER ACCUMULATING POWER AND FREE CONVEYOR SYSTEM

Edward J. Carney, Bloomfield Hills, Mich., assignor to Acco Babcock Inc., Fairfield, Conn.

Filed Sep. 28, 1982, Ser. No. 425,450
Int. Cl.³ B61B *10/02*
U.S. Cl. 104—172 B **8 Claims**



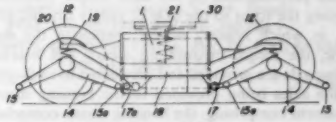
1. A power and free conveyor system comprising
a plurality of carriers,
a carrier track comprising an upper run, a lower run, and connecting portions connecting the upper and lower runs, such that the carriers can be moved along the upper run and thereafter through a first connecting portion along the lower run in inverted position and returned through a second connecting portion to the upper run,
conveyor means associated with the upper run, the lower run and the connecting portions and having pushers therein,
each said carrier having a first pusher dog thereon movable downwardly when the carrier moves along the upper run for engagement with a pusher of the conveyor means,
said first dog being operable when the carrier is moving along the lower run so that it is out of engagement with a pusher of the conveyor means,
said carrier having a second pusher dog thereon which is normally out of engagement with the pusher of the conveyor means when the carrier is moved along the upper run and is moved into engagement with the pusher of the conveyor means when the carrier is moved along the lower run.

4,461,217

MOTORIZED RAILWAY BOGIE

Hanjochen Girod, and Gerhard Korn, both of Mülheim, Fed. Rep. of Germany, assignors to Thyssen Industrie AG, Fed. Rep. of Germany

Continuation of Ser. No. 177,838, Aug. 14, 1980, abandoned. This application Mar. 21, 1983, Ser. No. 477,364
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1979, 2933706
Int. Cl.³ B61C *9/50, 9/52;* **B61F** *3/04, 3/16*
U.S. Cl. 105—135 **4 Claims**

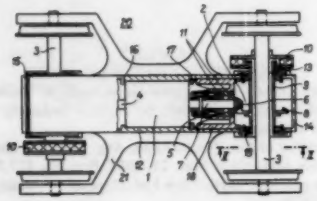


1. A bogie for a rail vehicle comprising:
a hollow jacket (2) having at least one open face and forming an electric motor housing;
a stator winding assembly (3) in said hollow jacket;
a rotatably arranged motor shaft (6*a*) in said stator winding assembly having an axis extending in a travel direction of the vehicle;
a crossbeam (1) consisting of said parts and said hollow jacket;
a motor bearing bracket (31) connected to and covering said at least one end face for rotatably receiving said motor shaft;
a miter and differential gear housing (32) connected to said bracket and including therein a miter gear (5*a*) and a differential gear (50) connected to said motor shaft;
a pair of Cardan shafts (9, 9*a*) with couplings (10, 11, 11*a*) connected to said differential gear;
a wheel (12) with wheel axles connected to each of said Cardan shafts with couplings;
said motor bearing bracket (31) being formed as a part of said miter and differential gear housing (32) which is connected directly to said at least one face, said miter gear including a pinion mounted on pinion bearings (8) in the miter and differential gear housing, said motor shaft (6*a*) mounted for rotation in said pinion bearings;
a double member link (14, 14) connected on both sides of each of said wheels to each wheel axle, each of said double member links having inside ends adjacent a center of said bogie and opposite outside ends, said inside ends being pivotally connected to said side parts of said cross beam, said outside ends of said double member links on one end of said bogie being connected to each other to frame said wheels with wheel axles, each of said double member links engaged with one of said side parts for supporting said side parts; and
a hollow tube (16) connected between outside ends of said double member links on each end of said bogie.

4,461,218
ELECTRIC RAIL PROPULSION UNIT

Jürgen Kuhlow, and Christian Sohrt, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 5, 1981, Ser. No. 290,314
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1980, 3030594
Int. Cl.³ B61C *3/00, 17/00*
U.S. Cl. 105—137 **10 Claims**



1. In an electric rail propulsion unit comprising a driven axle, an electric propulsion motor having a stator and a rotor having an axis perpendicular to the axle, torque-transmitting means coupling the rotor to the axle to supply driving power to the axle, in which housing means containing the stator of the motor, the torque-transmitting means and bearings for the driving axle are provided and connected to each other, cutouts for the axles being provided in the housing means, the improvement comprising: the housing means comprising a single one-piece hollow beam having an internal cross-sectional area at least as great as the external cross-sectional area of the motor and of the torque-transmitting means, the motor and the the torque-transmitting means being mounted within the hollow beam, whereby the beam serves as a common housing therefor, said beam housing having a surface at its end which permits inserting the motor and torque-transmitting means longitudinally into said hollow beam.

4,461,219
SINGLE LEVER HATCH COVER

Norman E. Bateson, Culver, Ind., assignor to Norson Industries, Inc., Culver, Ind.

Continuation of Ser. No. 124,798, Feb. 26, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 431,685
Int. Cl.³ B60D *17/12;* **B61D** *39/00;* **B65D** *45/08*
U.S. Cl. 105—377 **10 Claims**

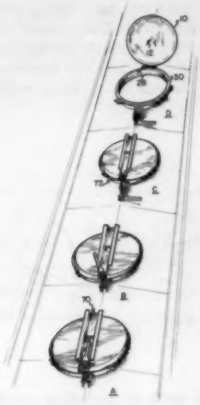
1. A hatch cover assembly for closing and opening a hatch on a vehicle having a hatch with a coaming therearound, said assembly comprising:

a hatch cover compression member having a distal end and an opposite end, said compression member being pivotally mounted at its said opposite end on said vehicle;

a hatch cover pivotally mounted inwardly of its periphery on said compression member intermediate the ends of the latter and being free at its periphery to move both around and laterally of its pivot point on said compression member;

a sealing gasket intermediate said cover and said coaming for providing a seal between said cover and said coaming; and

locking means pivotally mounted relative to and adjacent said distal end of said compression member, said locking means being pivotable to a first position in which it applies pressure to said distal end of said compression member and thereby applies pressure to said central portion of said cover to urge said cover toward said coaming at all peripheral portions thereof and being pivotable to a second position in which it releases said distal end of said compression member and permits said compression member to

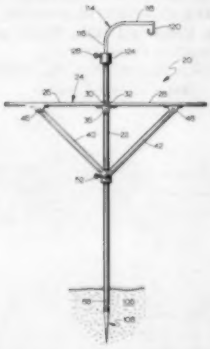


pivot and thereby, permits movement of said cover away from said hatch.

4,461,220
ADJUSTABLE FOLDING TABLE AND HANGER

Elmer Wetzel, 412 Avenue F West, Bismarck, N. Dak. 58501

Filed Mar. 15, 1982, Ser. No. 357,816
Int. Cl.³ E05G *3/00*
U.S. Cl. 108—30 **20 Claims**



1. A table comprising:

a substantially vertical support member defining a substantially vertical axis and having a lower ground engaging portion and an upper portion;

first and second pivotal leaf members positioned about the vertical support member and pivotally attached to each other along adjacent sides;

first pivotal connecting means for pivotally connecting the first and second pivotal leaf members to each other such that the pivotal leaf members form a table surface when in an up position and are substantially parallel to each other and the vertical axis of the support member when in a down position;

support linkage means for pivotally connecting the first and second pivotal leaf members to the vertical support member such that the pivotal leaf members are pivotally connected to the vertical support member and for providing

support to the leaf members in the up and the down position and when moving between the up and the down position and the support linkage means being positionable in a same plane with the vertical support member and a first pivotal connecting means and the first and second leaves being adjacent the support member when the leaves are in the down position forming a substantially flat folded table; and

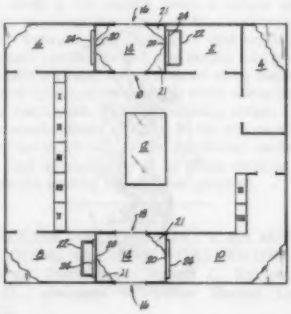
means for holding the first and second leaf members about the vertical support member when the first and second leaf members are in the up position and in the down position wherein the means for holding includes first and second leaf retainers positioned proximate the adjacent sides of the first and the second leaf members, each retainer having a main portion fixedly attached to an underside of the respective leaf member and having a retaining arm extending substantially perpendicularly therefrom, and wherein both leaves have recesses along the adjacent sides between the main portions of the retainers such that the vertical support member is substantially surrounded by the recesses when the leaves are in the up position and the vertical support member being substantially surrounded by the retainer arms when the leaves are in the down position.

4,461,221

SYSTEM FOR DETAINING ROBBERS ON PREMISES

Alfred J. Schandle, 31 Boston Post Rd., Westbrook, Conn. 06498, and Andrew G. Bakoledis, 12 Reservoir Rd., Clinton, Conn. 06413

Filed Sep. 30, 1982, Ser. No. 429,603
Int. Cl.³ E05G *5/02*
U.S. Cl. 109—6 **14 Claims**



1. A security system for a bank building or the like having a main business area wherein money transactions are carried out, said building being accessible to the public only through one or more lobbies having motor operated outer and inner doors wherein the outer doors allow access between outside the building and the lobbies and the inner doors allow access between the lobbies and the main business area, said system comprising:

(a) first manually operable means for opening the outer lobby doors to enter the lobbies from outside the building;

(b) second manually operable means for opening the inner lobby doors to enter the main business area from inside the lobbies;

(c) third manually operable means for opening the inner lobby doors to enter the lobbies from the main business area;

(d) fourth manually operable means for opening the outer lobby doors to exit the lobbies to outside the building;

(e) means inside the main business area having a plurality of compartments for holding currency, one of said compartments having sensor means therein for detecting the presence or absence of a currency packet in said one of said compartments;

(f) door locking means for locking said inner and outer lobby doors in a closed position when said sensor means detects the absence of a currency packet in said one of said compartments;

(g) means for disabling said first, second, third and fourth manually operable means from opening said lobby doors when the latter are locked by said locking means;

(h) narrow wavelength radio receiver means mounted adjacent said inner lobby doors in said main business area, said receiver means having a limited signal reception range on the order of several feet;

(i) a miniature radio transmitter concealed in a packet of currency normally disposed in said one of said compartments, said transmitter emitting a radio signal of the same wavelength as said receiver means; and

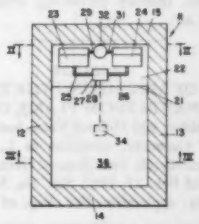
(j) means operably connected to said receiver means for temporarily enabling said third manually operable means only to open said inner lobby doors when said transmitter is within the effective receiving range of said receiver.

4,461,222

INSTALLATION FOR PROTECTION AGAINST BREAK-INS

Jean-Michel Brunner, and Daniel Deschamps, both of Trappes, France, assignors to Fichet-Bauche, Velizy, France

Filed Jan. 20, 1982, Ser. No. 340,864
Claims priority, application France, Jan. 28, 1981, 81 01647
Int. Cl.³ E05G *1/12*
U.S. Cl. 109—29 **22 Claims**



1. A method of protecting an article-containing space from access by an unauthorized person, said method comprising:

(a) sensing attempted unauthorized entry into said space with a detector;

(b) rapidly and irreversibly filling at least a portion of said space with a hardenable foam adapted to form a rigid mass occupying a defined volume and activated by said detector in response to said sensing, said portion having a volume substantially greater than that of means for forming said foam and greater than that occupied by any article located within said space.

4,461,223

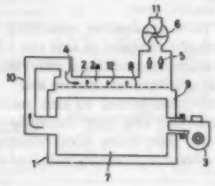
METHOD AND AN APPARATUS FOR PRODUCING MOISTURIZED HOT AIR

Saburou Masaki, Misaki, Japan, assignor to Hiroyashi Iizuka, Chiba, Japan

Continuation of Ser. No. 309,544, Oct. 7, 1981, abandoned. This application Sep. 19, 1983, Ser. No. 533,724
Claims priority, application Japan, Oct. 27, 1980, 55-150563
Int. Cl.³ F23J *15/00*
U.S. Cl. 110—215 **1 Claim**

1. Apparatus for producing moisturized hot air comprising a low-temperature steam chamber generating low-temperature steam at sub-atmospheric pressure and low temperature, a combustion chamber furnishing heat for steam generation to the low-temperature steam chamber, said low-temperature

steam chamber surrounding the combustion chamber to receive heat for steam generation from the combustion chamber, chamber water surrounding the low-temperature steam chamber, a flue connecting the combustion chamber to the low-temperature steam chamber so as to mix high-temperature combustion gas in the combustion chamber with low-temperature steam in the low-temperature steam chamber, a supply duct connecting an upper space of the low-temperature steam chamber to means for using moisturized hot air, and suction means connected to the supply duct adjacent the upper space of the low-temperature steam chamber at sub-atmospheric



pressure, the suction means comprising a suction fan mounted within the supply duct, the upper space of the low-temperature steam chamber being defined by a space between the chamber water level and an uppermost wall of the low-temperature steam chamber thereby providing a horizontal passageway which connects the flue to the supply duct and in which low-temperature steam rises from the chamber water and is mixed with high-temperature combustion gas, the mixture producing moisturized hot air and condensation of sulfurous acid gas which becomes trapped in the chamber water, eventually being drawn off, thereby providing desulfurization of the moisturized hot air.

4,461,224

METHOD OF MINIMIZING THE EMISSION OF CONTAMINANTS FROM FLAME COMBUSTION

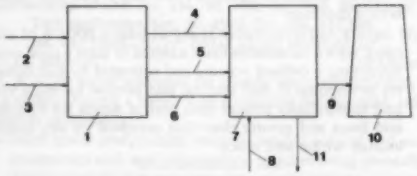
Sigfrid Michelfelder, and Helmut Voos, both of Gummersbach, Fed. Rep. of Germany, assignors to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Filed Feb. 17, 1982, Ser. No. 349,390

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1981, 3106580

Int. Cl.³ F23J *11/00, 15/00*

U.S. Cl. 110—345 **10 Claims**



1. A method of treating reaction products which result from the flame combustion of fuel which contains contaminants, said method comprising the steps of:

subjecting said fuel to flame combustion in a combustion chamber to form reaction products which contain gaseous contaminants;

adding additives to said combustion chamber by means of a fluid carrier flow, accompanied by the formation of a veil which surrounds the burner flame, for reaction in said combustion chamber with said gaseous contaminants of said reaction products to form remaining reactive additives, reactive ash constituents, and further reaction products which contain still uncombined gaseous contaminants;

reacting said remaining reactive additives, said reactive ash constituents, and said still uncombined gaseous contaminants of said further reaction products externally of said combustion chamber, adding supplementary additive to said external reactions, at least partially initiating said external reactions in a reactor, continuing said external reactions in a subsequent filtering separator, and adding said supplementary additive to said reactor, said supplementary additive at least in part is still reactive additive and reactive ash constituents separated-off in said filtering separator, conveying a partial flow, from said combustion chamber, of said remaining reactive additives, said reactive ash constituents, and said still uncombined gaseous contaminants of said further reaction products to said reactor; and combining this partial flow with the remaining flow of such products from said combustion chamber prior to entry into said filtering separator.

4,461,225

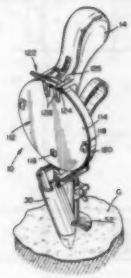
MULTIPLE SEED PLANTER WITH SEED DISCHARGE MECHANISM

James H. Patrick, Thunderbird Meadows, Kirkland, Ariz. 86332

Filed Dec. 1, 1982, Ser. No. 445,912

Int. Cl.³ A01C *5/02*

U.S. Cl. 111—95 **14 Claims**



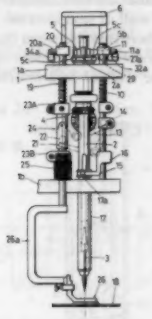
1. A seed planter comprising a body having a discharge passage at one end and a handle at the other end, a magazine between said passage and said handle for supplying seeds to said discharge passage, a hood pivotally mounted on said body and having an open position opening a discharge end of said discharge passage and a closed position closing off the end of said discharge passage, means for moving said hood between said open and closed positions comprising a lever rod pivotally supported by said body and having linkages connecting said lever rod to said hood to move said hood when said lever rod is moved by a lever arm, said magazine having a receptacle carriage and a pawl moveable by said lever arm for rotating said receptacle carriage when said hood is moved from the open position to the closed position, a cover for said magazine, said cover comprising a cover plate, a cover lever affixed to said cover plate and pivotally connected to said body, said cover lever having means extending toward said handle for engagement by an operator to open said cover, a cover latch moveably supported by said handle and having a catch leg to engage said cover lever when said cover plate is open to hold said plate in an open position.

4,461,226

WAITING MEANS IN AN EMBROIDERING MACHINE

Ikuo Tajima, Nagoya, Japan, assignor to Tokai Kogyo Mishin Kabushiki Kaisha, Kasugai, Japan

Filed Mar. 31, 1983, Ser. No. 480,674
Claims priority, application Japan, Apr. 20, 1982, 57-66738; Jun. 28, 1982, 57-112242
Int. Cl.³ D05C 3/02; D05B 27/20
U.S. Cl. 112—98 4 Claims



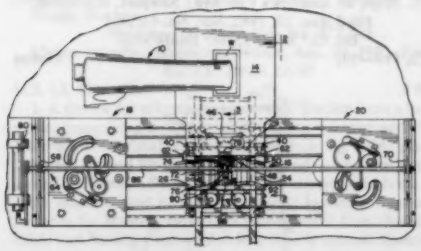
1. For use in an embroidering machine having a head; a needle bar vertically movably carried in the forward end portion of said head and having a needle operatively connected thereto for forming embroidery stitches on a cloth; a nipple vertically movably carried in the forward end portion of said head in parallel relation with said needle bar, said nipple slidably receiving said needle bar therewithin and adapted to be lowered synchronously when said needle bar is lowered so as to press the cloth at the needle location where said needle passes through the cloth; and a presser foot vertically movably carried in the forward end portion of said head in parallel relation with said needle bar and said nipple, said presser foot, when said needle is raised, being adapted to be displaced horizontally so as to horizontally feed the cloth while pressing the cloth around the needle location, waiting means comprising lifting means mechanically coupled to the top portion of said head and adapted to lift each of said needle bar, said nipple and said presser foot upwardly so as to bring each to a waiting position when the sewing operation is stopped.

4,461,227

QUICK RELEASE MECHANISM FOR AN AUTOMATIC SEWING MACHINE WORKHOLDER

Jack S. Abram, Northbrook; Robert L. Kasrow, Hoffman Estates, Ill., assignors to Union Special Corporation, Chicago, Ill.

Filed Sep. 18, 1981, Ser. No. 303,689
Int. Cl.³ D05B 21/00
U.S. Cl. 112—121.15 15 Claims



1. In a sewing machine having an automatically controlled carriage for moving a workholder in relation to the stitch forming instrumentalities of said machine during a sewing operation, means for removably securing the workholder to the automatically controlled carriage comprising:

a pair of cantilevered leaf spring means fixedly secured to said automatically controlled carriage;

positive position retaining means secured to the free end of said spring means for accepting and holding a generally spherical lug means carried by said workholder such that said workholder may be secured to said automatically controlled carriage; and

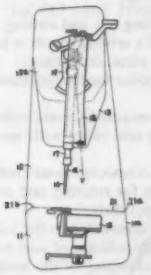
means operative at the completion of the sewing operation for releasing said lug means from said position retaining means whereby said workholder may be detached from said automatically controlled carriage.

4,461,228

SEWING MACHINE FRAME CONSTRUCTION

Yoshihide Yoneda, Hirakata, Japan, assignor to Maruzen Sewing Machine Co., Ltd., Osaka, Japan

Filed Jun. 14, 1982, Ser. No. 388,398
Claims priority, application Japan, Jun. 16, 1981, 56-89211
Int. Cl.³ D05B 73/00
U.S. Cl. 112—259 7 Claims



1. A sewing machine, comprising a bed having a generally planar and upwardly facing work surface thereon, said work surface having a front edge which faces a operator of said sewing machine, having a rear edge on a side thereof opposite said front edge, and being adapted to support a piece of fabric for movement in a first direction away from said front edge and toward said rear edge, a hook rotatably supported within said bed below said work surface; a stand supported on and projecting upwardly from said bed at a location which is spaced from said work surface in a second direction generally transverse to said first direction; an arm supported on and extending generally horizontally from an upper end of said stand to a location approximately above said work surface; a head supported on said arm at a location approximately above said work surface; needle support means supported on said head directly above said work surface and movably supporting a needle, said needle extending downwardly and away from said front edge in a third direction which is substantially perpendicular to said work surface and forms an acute angle with respect to a vertical line, said needle being movable in said third direction between a first position in which it is spaced above said work surface and a second position in which it extends through said work surface and is adjacent said hook, the path of movement of said needle intersecting said work surface at a location which is spaced from said front edge thereof and is closer to said rear edge than to said front edge thereof; and means for effecting movement of said needle between said first and second positions.

4,461,229

DEVICE FOR PULLING OUT AND CUTTING OFF THREADS IN A SEWING MACHINE

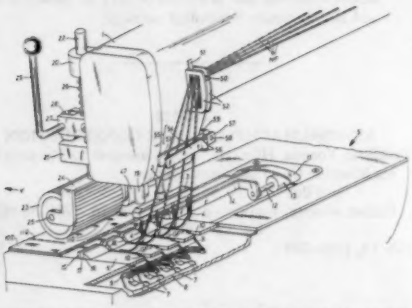
Eugen Angele, and Ludwig Drechsel, both of Kaiserslautern, Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Mar. 17, 1982, Ser. No. 359,068

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1981, 3116931

Int. Cl.³ D05B *27/14, 65/02*

U.S. Cl. 112—291 **6 Claims**



1. A device for pulling out and cutting off a needle thread and a looper thread of a sewing machine having a main drive, a looper and a needle plate, comprising:

a material delivery roller for feeding material in a feed direction;

first drive means connected to said roller and to said main drive for rotating said roller with operation of said main drive;

second drive means connected to said roller and independent of said main drive for rotating said roller to advance the material in said feed direction;

a first cutting blade connected to the looper for cutting the needle thread with rotation of said roller by said second drive means and clamping of the needle thread;

clamping means connected to the sewing machine for clamping the needle thread;

a guide connected above the needle plate and between said first cutting blade and said roller and extending transversely to the feed direction;

said guide including an inlet groove for the passage of the looper thread;

a second cutting blade movable in said guide past said groove to cut the looper thread;

said guide having a counterknife for cooperation with said second cutting blade to cut the looper thread; and

cutting blade drive means connected to said second cutting blade for moving said second cutting blade to cut the looper thread after said second drive means is operable to rotate said roller and advance the material in the feed direction by a selected amount.

4,461,230

BOAT MAST MUFFLER

M. Barrie Hartley, 1276 Casitas Pass, Carpinteria, Calif. 93013; David L. Hale, 5674 Stone Canyon Rd., Goleta, Calif. 93117, and Vincent Sefcik, 30 Winchester Cyn. Rd., Goleta, Calif. 93117

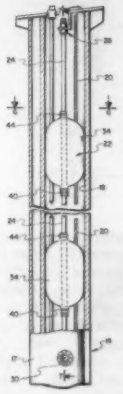
Filed Jun. 28, 1982, Ser. No. 393,185

Int. Cl.³ B63B *15/00*

U.S. Cl. 114—90 **2 Claims**

1. In combination with a boat, said boat having a deck, said boat having a mast, said mast having a lower end located directly adjacent to said deck and an upper end spaced furthest from said deck, said mast being hollow forming an internal chamber extending entirely through said mast, elongated members (such as a wire or cable) being located within and conducted entirely through said internal chamber, muffler means located within said internal chamber for fixing the position of said elongated members to thereby eliminate noise produced by said elongated members contacting the wall of said internal chamber due to movement of said boat, said muffler means comprising:

an inflatable bladder assembly mounted within said internal chamber, said inflatable bladder assembly to be inflatable to press against the wall of said internal chamber binding said elongated members therebetween thereby eliminating the producing of noise by movement of said elongated members against the wall of said internal chamber, said



inflatable bladder assembly including a plurality of separate bladder units being located in a spaced-apart manner throughout said internal chamber, said inflatable bladder assembly including an inflating conduit, said separate bladder units being mounted on said inflating conduit, said inflating conduit having a plurality of spaced-apart openings formed through the wall of said inflating conduit, a said separate inflatable bladder unit being attached to said inflating conduit directly over each said opening, each said separate bladder unit includes a pair of access openings, said inflating conduit passes through said access openings with such being tightly closed about said inflating conduit, whereby pressurized gas is to be conducted through said inflating conduit and through said openings to thereby expand each said bladder unit.

4,461,231

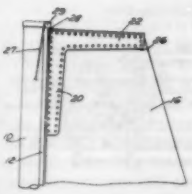
SAILING CRAFT

John G. Hoyt, 49 America's Cup Ave., Newport, R.I. 02840

Filed Aug. 23, 1982, Ser. No. 410,502

Int. Cl.³ B63B *15/00*; B63H *9/08*

U.S. Cl. 114—102 **7 Claims**



1. In a sailing craft having a mast, a sail, track means on the

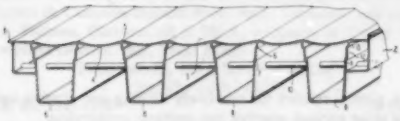
mast supporting a vertical edge of the sail, a gaff in the form of an L-shaped plate having substantial width, said gaff fastened to the sail wherein its two legs support the upper edge of the sail, the first leg of said gaff that parallels the mast extending a substantial distance therealong and being held against the mast by said track means affixed to the sail, a second leg extending outwardly from said first leg and at an angle thereto and halyard means supporting the sail and gaff in an elevated position on the mast.

4,461,232

LIGHTWEIGHT MARINE BARGE COVER

Robin L. Berg, Hudson, Wis., assignor to Proform, Inc., Minneapolis, Minn.

Filed Jul. 10, 1981, Ser. No. 282,318
Int. Cl.³ B63B *19/14*
U.S. Cl. 114—201 R **21 Claims**



1. A cover for oceangoing barges, said barges defining an upwardly open space, said cover comprising a set of adjacent, generally coplanar individual cover units, each said cover unit being further comprised of:

a cover member extending across the width of the opening in said barge, said cover unit being, in cross-section, of a shape resembling a series of joined, concave, caternary curves,

longitudinal and lateral end panels extending integrally downward from said cover member, said longitudinal and lateral end panels engaging the deck of the barge on which they rest,

a plurality of laterally spaced structural beams affixed to the underside of said cover member, extending perpendicular to the longitudinal centerline of said barge and between said longitudinal end panels,

a plurality of support pipes extending through said support beams and substantially parallel to the longitudinal center of said barge,

a weather-seal means affixed to each longitudinal end panel of said unit, for articulation with the corresponding weather-seal means of adjacent units, so as to provide a watertight seal between said units along said longitudinal end panels,

said cover being of sufficient strength and deflection characteristics so as to be suitable for extended use on ocean seas.

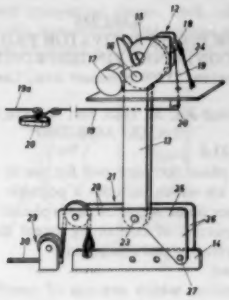
4,461,233

RELEASING DEVICE FOR LIFE BOATS AND THE LIKE

Per Nilsson, Västra Frölunda, Sweden, assignor to AB Welin, Sweden

Filed Apr. 27, 1982, Ser. No. 372,442
Claims priority, application Sweden, Apr. 29, 1981, 8102708
Int. Cl.³ B63B *23/00*
U.S. Cl. 114—378 **8 Claims**

1. A device for releasing a life boat or the like from a hoisting cable, comprising a lifting means having a lower end thereof fastened to the boat, a hook for the hoisting cable pivotally mounted on said lifting means and movable between open and closed positions, a releasing device for moving said hook to the open position, said lifting means being limitedly displaceable towards the hoisting cable by a pulling force from the hoisting cable and having a substantial length in a vertical direction to provide a guide for the lifting means during the entire displacement thereof, a locking device for preventing the displacement of said lifting means, and an emergency releasing device comprising a blocking means connected to the hook and arranged eccentrically with respect to the pivot axis of the hook, said blocking means being arranged to pivot the hook to the open



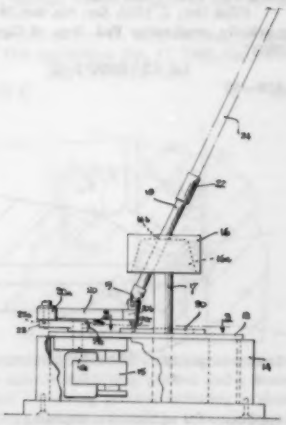
position upon displacement of the lifting means towards the hoisting cable when said locking device is released.

4,461,234

FLAG WAVING MACHINE

William E. Bounds, P.O. Box 1547, Torrance, Calif. 90505

Filed Oct. 25, 1982, Ser. No. 436,268
Int. Cl.³ G09F *17/00*
U.S. Cl. 116—173 **8 Claims**



1. A flag waving machine for waving a flag support on a staff comprising

a plate member having an hourglass-shaped opening formed therein,

means for fixedly supporting said plate member,

a pair of similar elliptically shaped guide members pivotally mounted in end-to-end relationship on said plate member within the opening formed therein, a channel being formed between said guide members and the wall of said plate member opening,

means for resiliently urging said guide members against one side of the wall of said plate member opening,

rod means for supporting the staff of said flag,

means for pivotally supporting said rod means,

pin means coupled to said rod means, said pin means riding in the channel formed between guide members and the wall of the plate member opening, and

means for reciprocally driving said rod means such that the pin means rides reciprocally in said channel with said

guide members guiding the path of said pin means in said channel in a figure eight pattern.

4,461,235

VAPOR PHASE ACTIVATOR PAD FOR A SELF-CONTAINED FINGERPRINTING KIT

William P. Morton, 11260 Missouri Ave., Los Angeles, Calif. 90025

Filed Jul. 20, 1983, Ser. No. 516,122
Int. Cl.³ A61B *5/10*
U.S. Cl. 118—31.5 **4 Claims**

1. A vapor phase activator pad for use in a self-contained fingerprinting kit which includes a portable vapor tank into which said vapor phase activator pad is placed in order to fume an object suspected of containing latent fingerprints, said vapor phase activator pad comprising:

a. a gauze pad;

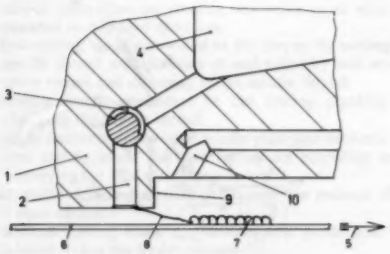
b. a composition which consists of specified chlorinated organic solvents wherein said gauze pad is chemically treated with said composition so that when a quantity of alkyl-cyanoacrylate is placed onto said vapor phase activator pad, said vapor phase activator pad generates vapors of the chemical cyanoacrylate.

4,461,236

DEVICE FOR INTERMITTENT APPLICATION OF GLUE

Manfred Langenbach, Gevelsberg, Fed. Rep. of Germany, assignor to Maschinenfabrik Alfred Schmermund GmbH & Co., Gevelsberg, Fed. Rep. of Germany

Filed Dec. 2, 1982, Ser. No. 446,392
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1981, 3148037
Int. Cl.³ B05C *5/02*
U.S. Cl. 118—50 **10 Claims**



1. An applicator for adhesives comprising:

a body portion, said body portion defining a first surface adapted to be juxtapositioned to but spaced from a surface to which an adhesive is to be applied;

an ejector, said ejector being formed in said body portion and terminating at said first surface;

means for intermittently and controllably supplying adhesive in liquid form to said ejector whereby the adhesive will be discharged from the applicator and will form a bead on a surface which moves relative to said first surface;

a recess in said body portion, said recess being positioned downstream in the direction of said relative motion from the termination of said ejector, said recess being in part defined by a second surface of said body portion which is spaced from the surface to which the adhesive is applied by a greater distance than said first body portion surface; and

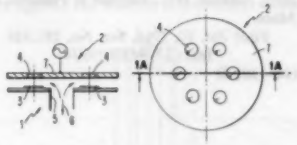
means for establishing a low pressure in the region of said recess.

4,461,237

PLASMA REACTOR FOR ETCHING AND COATING SUBSTRATES

Holger Hinkel, Boeblingen; Gerhard Kaus, Moetzingen; Georg Kraus, Wildberg; Ulrich Kunzel, Kusterdingen, and Reinhold Muehl, Altdorf, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 17, 1983, Ser. No. 476,290
Claims priority, application European Pat. Off., Mar. 18, 1982, 82102224.1
Int. Cl.³ C23C *13/08*
U.S. Cl. 118—50.1 **18 Claims**



1. A plasma reactor for reactively etching and coating substrates in an excited reactive gas ambient, comprising;

A. a pair of planar opposed and spaced electrodes, with one of said electrodes adapted to support said substrates and the second of said electrodes having apertures containing a dielectric medium for and opposite each of said substrates,

B. means for generating a plasma between said electrodes, and

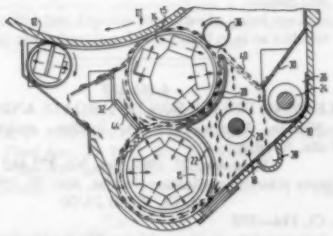
C. means for flowing a reactive ambient radially across said substrates between said electrodes.

4,461,238

MAGNETIC BRUSH DEVELOPING STATION

Erich Baier, Suenzhausen; Rainer Koefferlein, Munich, and Bernhard Schlageter, Ottobrunn, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 6, 1982, Ser. No. 375,456
Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3119010
Int. Cl.³ G03G *15/09*
U.S. Cl. 118—658 **6 Claims**



1. In a developer station having a housing containing a body of developer mix including toner and carrier particles in a supply zone and a rotary developer drum for conducting developer mix from said body to an inking gap between said developer drum and a charge image carrier passing through said station for developing charge images generated on said carrier, apparatus for handling developer mix in said station comprising:

first and second parallel arranged rotary screws extending longitudinally of said developer drum for conducting

developer mix in opposite directions laterally in said housing, said second screw being between said first screw and developer drum,

a partition wall separating said first and second screws having an opening connecting the discharge end of said first screw with the inlet end of said second screw,

a discharge outlet means underlying said opening, and

means for passing developer mix from said developer drum to said discharge outlet means comprising a stripping means adjacent said developer drum for setting a uniform layer thickness for the developer mix conducted by said drum to said inking gap and discharging excess developer mix from said developer drum to said supply zone and a discharge plate means mounted between said stripping means and said discharge outlet means for transferring a portion of said excess developer mix to said discharge outlet means.

4,461,239

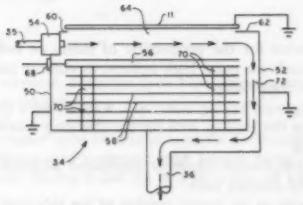
REDUCED CAPACITANCE ELECTRODE ASSEMBLY

Vincent D. Cannella, Detroit; Prem Nath, Rochester, and Robert J. Shuman, Clawson, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jul. 30, 1982, Ser. No. 403,417

Int. Cl.³ C23C *13/10*

U.S. Cl. 118—718 **19 Claims**



1. A reduced capacitance electrode assembly for use in alternating current electrode powered plasma systems, said assembly comprising:

an electrode adapted to receive alternating current power for maintaining a plasma region; and

a plurality of electrically conductive plates, said plates being closely spaced apart by less than a predetermined distance on one side of said electrode for precluding the formation of a plasma region on said one side of said electrode and for providing a plurality of serial capacitances with said electrode to present a substantially reduced capacitance to said alternating current power.

4,461,240

ANIMAL MONITORING APPARATUS

Earl W. Ostler, Billings, Mont., assignor to Agri-Systems, Billings, Mont.

Continuation-in-part of Ser. No. 243,469, Mar. 13, 1981, Pat. No. 4,350,119. This application Jun. 17, 1982, Ser. No. 389,219

Int. Cl.³ A01K *5/02*

U.S. Cl. 119—51 R **10 Claims**

1. Animal monitoring apparatus including an animal reviewing portion, an animal identifying portion and a control portion; said animal reviewing portion including at least one animal detecting station including transmitter actuating means; said animal identifying portion including a plurality of transmitter sections and a receiver section therefor, each said transmitter section being disposed on an animal, each said transmitter section including self-contained power source means, signal generating means for producing a first signal, signal coding means for encoding said first signal to produce a second signal unique to a specific animal, and actuatable switching means, said receiver section being disposed adjacent to said reviewing portion, said receiver section including power source means, signal receiving means, signal decoding means and signal transferring means, antenna means co-acting with said receiver section, electrical circuitry connecting said receiver section with memory and comparing means, each said transmitter section continuously transmitting said second signal while in the vicinity of said receiving section; whereby approach of an

animal to said reviewing portion causes said actuating means to activate said switching means so a signal is generated, coded and transmitted by said transmitter section to said receiver section where the signal is received by said antenna and transferred to said signal receiving means and said signal decoding means and thereafter signals are sent to said memory means and said comparing means.

4,461,241

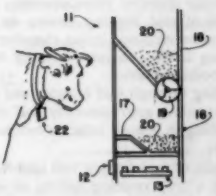
AUTOMATIC ANIMAL MONITORING APPARATUS

Earl W. Ostler, Billings, Mont., assignor to Agri-Systems, Billings, Mont.

Continuation-in-part of Ser. No. 243,464, Mar. 13, 1981, Pat. No. 4,350,118. This application Jun. 17, 1982, Ser. No. 389,221

Int. Cl.³ A01K *5/02*

U.S. Cl. 119—51 R **10 Claims**



1. Animal monitoring apparatus including an animal reviewing portion, an animal identifying portion and a control portion; said animal reviewing portion including a plurality of animal detecting stations including transmitter actuating means; said animal identifying portion including a plurality of transmitter sections and a plurality of receiver sections therefor, each said transmitter section being disposed on an animal, each said transmitter section including selfcontained power source means, signal generating means for producing a first signal, signal coding means for encoding said first signal to produce a second signal unique to a specific animal, and actuating means, each receiver section being disposed adjacent to said reviewing portion, said receiver section including power source means, signal receiving means, signal decoding means and signal transferring means, antenna means co-acting with each receiver section, each of said receiver sections being connected electrically with receiver sections of all other animal detecting stations and with interrogating means, each said transmitter section continuously transmitting said second signal while in the vicinity of a receiving section, and said interrogating means sequentially searching each of said receiver sections in a continuous rapidly repeating sequence, memory means capable of accepting an animal performance schedule,

means for comparing signals from said interrogating means with said animal performance schedule, means for selectively activating electrical energizing means, and recording means for compiling a log of the activation of said electrical energizing means and the time periods of such activations.

4,461,242

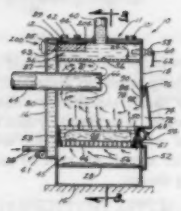
MEANS FOR HEATING WATER BY WOOD BURNING

Milton W. Black, Gibbon, Minn., assignor to Northern Leader, Inc., New Hope, Minn.

Continuation-in-part of Ser. No. 131,524, Mar. 18, 1980, abandoned, which is a continuation-in-part of Ser. No. 935,370, Aug. 21, 1978, Pat. No. 4,201,185. This application Oct. 13, 1981, Ser. No. 310,885

Int. Cl.³ F22B *5/00*

U.S. Cl. 122—15 7 Claims



1. A wood burning furnace comprising:

a furnace housing having front and rear walls, opposite side walls, and top and bottom walls,

a firebox within said furnace housing having a front wall joined to said front wall of said housing, the remainder of said firebox being spaced inwardly from at least some of said rear, side, top and bottom walls of said housing to define a boiler chamber therebetween,

said top wall of said housing having an inlet opening in communication with said boiler chamber; said rear wall of said housing having an inlet opening in communication with said boiler chamber;

a flue extending through said housing and said boiler chamber and extending approximately half way into said firebox and being in spaced relation below said top wall of said firebox;

said front walls of said firebox and said housing being provided with a door opening having an upper edge and a lower edge and providing communication from the exterior of said firebox to the interior of said firebox;

a door having upper and lower edges and being positioned in covering relation over said door opening;

a main draft opening in said firebox adjacent the bottom thereof and below said door opening, said main draft opening providing communication of air from the exterior of said housing to the interior of said firebox;

a secondary draft opening in said firebox above said main draft opening and providing communication of air from the exterior of said housing to the interior of said firebox, said secondary draft opening comprising at least one hole in said door adjacent said upper edge of said door;

smoke damper means positioned between said secondary draft opening and the interior of said firebox to prevent smoke from exiting said secondary draft opening, said damper means having an upper edge and a lower edge, said upper edge of said damper means being hinged about a horizontal axis adjacent said upper edge of said door opening whereby said damper means may be pivoted inwardly about said horizontal axis during insertion of wood into said firebox through said door opening;

said lower edge of said damper means being spaced downwardly from said flue and said secondary draft opening and upwardly above said main draft opening whereby fresh air will pass from said secondary draft opening downwardly below said lower edge of said damper means and will mix with and be heated by hot gases which are rising within said firebox before said hot gases reach said flue.

4,461,243

STEAM OR HOT WATER GENERATOR OPERATING BY SOLID FUELS HAVING HIGH CONTENTS IN VOLATILE MATERIALS

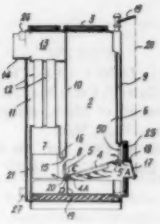
Giovanni Carpaneto, Milan, Italy, assignor to Officine Meccaniche Carbofuel S.p.A., Varese, Italy

Filed Jan. 27, 1982, Ser. No. 343,125

Claims priority, application Italy, Feb. 4, 1981, 19497 A/81

Int. Cl.³ F22B *31/04*

U.S. Cl. 122—15 2 Claims



1. A generator for the production of steam or hot water operated by fuels having a high content in volatile products, the generator comprising:

(a) a loading well having side walls, a floor and a roof;

(b) a door in the loading well for the charging thereof with solid fuels;

(c) a post combustion chamber positioned adjacent a side wall of the loading well;

(d) an opening in the lower portion of the side wall of the loading well so that the loading well and the post combustion chamber are in communication with each other;

(e) a partition extending upwardly from the floor of the loading well so as to partially obstruct the opening;

(f) a rear grate positioned in the opening substantially vertically so that a lower edge of the reaf grate is adjacent an upper edge of the partition with an underlying passage therebetween and an upper edge of the rear grate is adjacent a lower edge of the side wall of the loading well with an overlying passage therebetween;

(g) an inclined grate near the floor of the loading well, the inclined grate being inclined with respect to the horizontal so that the lowermost portion thereof is substantially adjacent the lower edge of the rear grate;

(h) access means for the admission of carbureting air into the loading well, the access means comprising an aperture in the side wall of the loading well for admitting air below the inclined grate and incorporating a fan member and a regulator means for controlling the amount of carbureting air admitted to the loading well, the air being divided into a first portion which passes through the inclined grate, solid fuels and thereafter the overlying passage and vertical grate, and a second portion which travels under the inclined grate where it is preheated and thereafter passes through the underlying passage, the first and second portions of the air combining in the post-combustion chamber to bring the still unburnt gases rich in volatile products to combustion; and

(i) recirculation means for recirculating at least a portion of the combustion gases discharged by the generator back into the loading well, the recirculation means including a return conduit the one end of which is positioned so as to collect at least a portion of the combustion gases discharged by the generator and the other

end of which is connected to a suction side of the fan member such that at least a portion of the air pumped into the loading well by the fan member consists of combustion gases previously discharged by the generator.

4,461,244

VERTICAL, COLLECTOR-TYPE HIGH-PRESSURE FEED WATER PREHEATER, WITH DESUPERHEATER AND A DEVICE FOR SEPARATING THE STEAM AND WATER PHASES

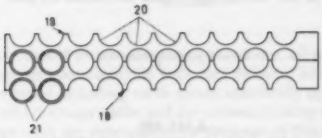
Helena Riegger, Zürich; Jörg Schwander, Laufen, both of Switzerland, and Günter Volks, Lauchringen, Fed. Rep. of Germany, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jun. 28, 1983, Ser. No. 508,652

Claims priority, application Switzerland, Jun. 30, 1982, 3992/82

Int. Cl.³ F22D *1/28*

U.S. Cl. 122—441 **4 Claims**



1. A vertical, collector type high pressure feed water preheater comprising:

a shell;

a preheater tube bundle in said shell, through which feed water flows, said preheater tube bundle having a transverse width and having a last leg in a direction of said feed water flow;

a desuperheater in said shell, said desuperheater including a desuperheater box enclosing an outlet feed water collector, said desuperheater further including a steam duct extending upward from said desuperheater box, said steam duct enclosing at least a portion of said last leg in a fluid tight manner, an upper end of said steam duct having a quarter bend;

a steam distribution duct positioned between said last leg and a portion of a remainder of said preheater tube bundle, said steam distribution duct defining a flat box in fluid communication with said upper end of said desuperheater steam duct, said flat box extending across said preheater tube bundle transverse width;

a plurality of first vertically spaced steam outlet opening formed on transverse ends of said flat box; and

a second steam outlet opening formed on a bottom of said flat box.

4,461,245

FLUID INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Michael Vinokur, 5 Fisherville Rd., No. 509, Willowdale, Ontario, Canada M2R 3B6

Filed Apr. 13, 1982, Ser. No. 368,030

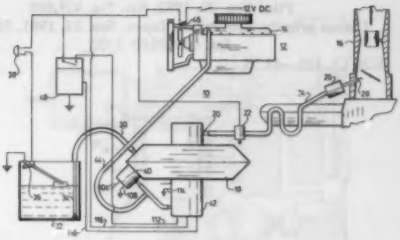
Int. Cl.³ F02M *25/02*

U.S. Cl. 123—25 L **16 Claims**

1. A pump adapted for use in a fluid injection system of an internal combustion engine having an intake manifold, said pump controlling the rate of flow of fluid injected into said engine and comprising:

variable pressure inducing means for pressurizing the fluid contained within the pump, said variable pressure inducing means including a first diaphragm dividing a main chamber of said pump into two main sub-compartments, one of said main sub-compartments containing the fluid to be pressurized, and an actuating member for moving said diaphragm into and out of pressure inducing relation with said fluid; and,

an auxiliary chamber into which said actuating member extends, said actuating member being connected to a second diaphragm in said auxiliary chamber, said second diaphragm dividing said auxiliary chamber into two auxiliary sub-compartments being in continuous air flow communication with said manifold;



whereby said variable pressure inducing means is responsive to changes in negative back pressure in said manifold to vary the pressure of said fluid such that as said negative back pressure decreases the pressure of said fluid increases thereby increasing the flow rate of fluid from said pump to said engine.

4,461,246

HYDRAULICALLY OPERATED FAN ASSEMBLY FOR A HEAT EXCHANGE ASSEMBLY

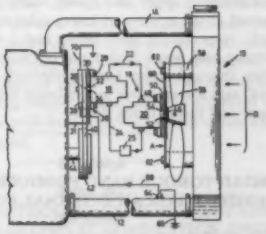
Roger Clemente, 1789 Vauxhill Rd., Union, N.J. 07083

Continuation of Ser. No. 320,886, Nov. 13, 1981, Pat. No. 4,366,783. This application Nov. 5, 1982, Ser. No. 439,332

The portion of the term of this patent subsequent to Jan. 4, 2000, has been disclaimed.

Int. Cl.³ F01P *7/10*

U.S. Cl. 123—41.12 **3 Claims**



1. A fan assembly for a heat exchanger assembly associated with a vehicle having an internal combustion engine, wherein a heat transfer fluid is passed through said heat exchanger assembly, which comprises:

a hydraulic motor including a drive shaft mounted proximate said heat exchanger assembly;

a fan mounted on said drive shaft of said hydraulic motor;

a hydraulic pump including a shaft mounted proximate said internal combustion engine;

an electrically operated magnetic clutch assembly disposed on said shaft of said hydraulic pump;

fluid conduit means including a reservoir disposed between said hydraulic pump and said hydraulic motor;

means for driving said hydraulic pump by said internal combustion engine; and

a switch means responsive to a preselect condition to assume an operative mode to activate said electrically operated

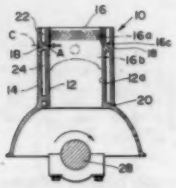
magnetic clutch assembly thereby to cause said shaft of said hydraulic pump to rotate and effect fluid flow of hydraulic fluid from said hydraulic pump to said hydraulic motor thereby to rotate said fan.

4,461,247

CYLINDER BLOCK

Yoshimasa Hayashi, Kamakura, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Sep. 20, 1982, Ser. No. 419,698
Claims priority, application Japan, Sep. 21, 1981, 56-149204
Int. Cl.³ F01P *3/02*
U.S. Cl. 123—41.79 **5 Claims**



1. A cylinder block comprising:

a cylinder-barrel section;

a water jacket outer wall section disposed around said cylinder-barrel section, defining therebetween a water jacket;

an upper block deck disposed along the whole periphery of the cylinder-barrel section to integrally connect the cylinder-barrel section with the water jacket outer wall section, said upper block deck being located below the top of the cylinder block and so positioned that its center lies at the level of an uppermost part of the skirt section of a piston which is at a range from TDC to 30 degrees relative to TDC in crank angle;

a lower block deck located in the vicinity of the lowermost part of said cylinder-barrel section to integrally connect said cylinder-barrel section with said water jacket outer wall section; and

means defining upper and lower water jackets which are located at the upper and lower sides of said upper block deck, respectively, said upper and lower water jackets forming said water jacket and communicating with each other through holes formed through said upper block deck, said lower water jacket being formed between said upper and lower block decks.

4,461,248

BROAD TORQUE BAND PRODUCING INTAKE MANIFOLD FOR AN INTERNAL COMBUSTION ENGINE

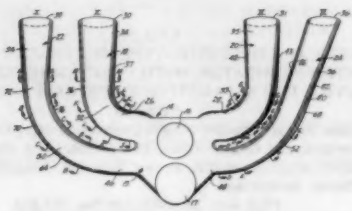
James D. McFarland, Jr., Torrance, Calif., assignor to Edelbrock Corp., El Segundo, Calif.

Continuation-in-part of Ser. No. 955,937, Oct. 30, 1978, Pat. No. 4,318,371. This application Mar. 1, 1982, Ser. No. 353,327
Int. Cl.³ F02B *75/20*
U.S. Cl. 123—52 M **26 Claims**

1. In an intake manifold for combustion air for a reciprocating internal combustion engine of the type where combustion air velocity through the manifold is a direct function of engine speed, an improvement comprising:

(a) a first set of runners of equal length and cross-sectional area, the length of each first set runner corresponding to a harmonic frequency of the fundamental frequency of air at standard temperature and the cross-sectional area of each first set runner being such that at a first engine speed combustion air velocity through the runner is substantially equal to the velocity at engine maximum torque; and

(b) a second set of runners of equal length and cross-sectional area, the length of each second set runner corresponding to a harmonic frequency of the fundamental frequency of air at standard temperature different from that for the first runner set and the cross-sectional area of



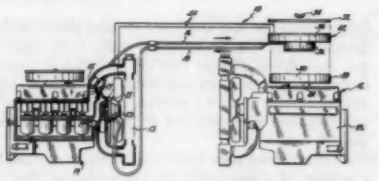
each second set runner being such that at a second engine speed, substantially different from the first engine speed, combustion air velocity through the runner is substantially equal to the velocity at engine maximum torque.

4,461,249

METHOD AND APPARATUS OF STARTING A COLD ENGINE

David S. Majkrzak, West Fargo, N. Dak., assignor to Steiger Tractor Inc., Fargo, N. Dak.

Filed Sep. 28, 1982, Ser. No. 425,548
Int. Cl.³ F02N *17/02*
U.S. Cl. 123—142.5 E **11 Claims**



1. A method for heating a first cold internal combustion engine having an air filter in an air filter housing positioned over a throat of a carburetor with a second internal combustion engine providing energy to a heat transferring device for heating air proximate the carburetor of the cold engine, the method comprising:

opening the air filter housing of the first cold engine;

removing the air filter from the air filter housing

positioning the heat transferring device within the air filter housing; and

supplying energy to the heat transferring device to heat the air proximate the carburetor.

5. An apparatus for heating a first cold internal combustion engine of a first vehicle with a second vehicle having a second internal combustion engine, the first cold engine having an air filter housing positioned over a carburetor, the apparatus comprising:

an apparatus housing positionable within the air filter housing of the cold engine;

means for transferring heat to air near the carburetor mounted within the housing; and

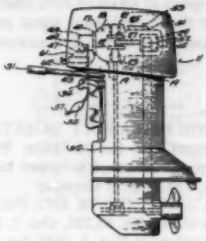
means for supplying energy from the running engine to the means for transferring heat attached to the means for transferring heat such that energy is supplied to the means for transferring heat.

4,461,250

OUTBOARD MOTOR WITH SELECTIVELY OPERABLE DRAINAGE SYSTEM

James W. Mohr, Brookfield, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 119,081, Feb. 6, 1980, abandoned. This application Aug. 17, 1982, Ser. No. 408,839
Int. Cl.³ F02B 33/04, 77/00; B63G 21/26
U.S. Cl. 123—198 R 22 Claims



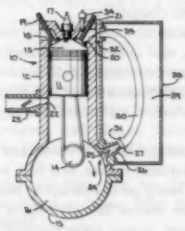
1. An outboard motor comprising a cylinder, air and/or fuel supply means communicable with said cylinder and having a drainage outlet including valve means selectively operable for closing said drainage outlet and for communicating said drainage outlet with the atmosphere for drainage of fluid from the motor.

4,461,251

CRANKCASE SUPERCHARGED FOUR CYCLE ENGINE WITH JET PUMP ASSIST

Benjamin L. Sheaffer, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 22, 1982, Ser. No. 452,153
Int. Cl.³ F02B 33/06
U.S. Cl. 123—317 6 Claims



1. In a supercharged four cycle internal combustion engine having a crankcase, a piston reciprocable in a cylinder, a device for supplying fuel to said cylinder, and valved air inlet and exhaust ports in said cylinder, a cylinder air charging device comprising:

(a) an air induction port disposed in the wall of said engine and with said air induction port providing communication between said crankcase and the atmosphere when said piston is at a position at the end of its upward stroke,

(b) an air outlet port disposed in said crankcase for receiving compressed air therethrough in response to each downward stroke of said piston, and

(c) means connecting said air outlet port to said cylinder for selective compressed air flow therebetween,

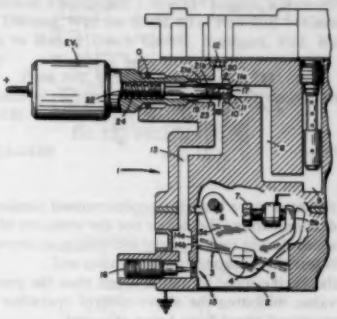
(d) said connecting means including air pressure amplifying means responsive to reciprocation of said piston to amplify the compression of air as the air flows from said air outlet port to said cylinder.

4,461,252

CARBURETOR FITTED WITH A DEVICE FOR FEEDING THE ENGINE WITH LEAN MIXTURE DURING ACCELERATOR RELEASE

Mauro Franchini, Bologna, and Arnaldo Veraldi, Casalecchio di Reno, both of Italy, assignors to Weber S.p.A., Italy

Filed Mar. 10, 1983, Ser. No. 474,058
Claims priority, application Italy, Mar. 17, 1982, 3372 A/82
Int. Cl.³ F02M 3/04
U.S. Cl. 123—325 2 Claims



1. Carburetor fitted with a device for feeding the engine with lean mixture during accelerator release, comprising at least: a main barrel; a throttle situated in the main barrel and rotating with a shaft, on which a control lever is splined; an idle system which connects a cavity full of fuel to the main barrel by means of progression and idle mixture holes; the carburetor is characterised by the fact that the idle system comprises at least: a cavity for the fuel or emulsion flow; passages situated at the inlet and the outlet of the cavity; primary holes for direct connection of the parts of the system upstream of the said passages with the parts for the system downstream; the said holes being upstream of the said progression holes in the system; secondary holes situated downstream of the passages; the said primary holes being intended to establish a flow of fuel which is notably less than the flow established by the metering elements; the said secondary holes not affecting the flow of fuel; an obturator device being present to close at least one of the said passages; electromechanical control means being provided to operate the obturator device during accelerator release and being subject to the action of a control unit for receiving electric signals from a contact which closes when the accelerator is released.

4,461,253

METHOD OF CONTROLLING THE IDLE ROTATIONAL SPEED OF AN INTERNAL COMBUSTION ENGINE

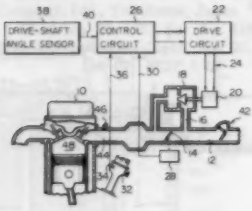
Mamoru Kobashi, Aichi, and Hiroshi Ito, Nagoya, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 15, 1982, Ser. No. 418,532
Claims priority, application Japan, Sep. 18, 1981, 56-146087
Int. Cl.³ F02D 33/02
U.S. Cl. 123—339 5 Claims

1. A method of controlling the idle rotational speed of an internal combustion engine including the steps of: detecting the rotational speed of the engine to produce an engine-speed signal which is determined depending upon the detected engine-speed; comparing said engine-speed signal with a reference signal which represents a desired idle speed of the engine to produce a control signal in accordance with the above comparison; increasing or decreasing the idle air flow to the engine in response to said control signal; and repeating the above sequence of steps so as to reduce the difference between

said detected engine speed and said desired idle speed, wherein the improvement comprises the steps of:

discriminating whether or not the above increasing step of idle air flow is continuously repeated more than a predetermined number of times or the above decreasing step of idle air flow is continuously repeated more than a predetermined number of times;



if repeated more than the predetermined number of times, discriminating whether or not the variation of the engine speed during said repeated increasing or decreasing steps is less than a predetermined value; and

if the engine-speed variation is less than the predetermined value, inhibiting the above control operation of the idle rotational speed from being executed.

4,461,254

DEVICE FOR CONTROLLING THE POSITION OF AN ELEMENT WHICH CONTROLS THE FUEL-AIR MIXTURE

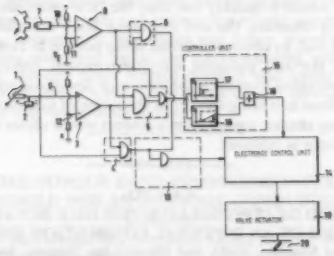
Manfred Pfalzgraf, Birstein, and Kurt Probst, Schwalbach, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 29, 1982, Ser. No. 403,183

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1981, 3131996

Int. Cl.³ F02D *11/10*

U.S. Cl. 123—350 **16 Claims**



1. In a device for controlling the position of an element which controls the air-fuel mixture of an internal combustion engine of an automotive vehicle, the device having a desired value transmitter for signaling a desired value of speed, the desired value transmitter producing an electric desired value signal which can be fed to an electronic control unit by which there can be controlled a setting member for displacing the element which controls the air-fuel mixture into a position corresponding to the desired value signal, the improvement wherein

controller means are provided between the desired value transmitter and the electronic control unit, said improvement further comprising

speed transmitter means for detecting and converting the speed of the vehicle into an electric speed signal;

means for sensing the amplitude of said speed signal and the amplitude of said desired value signal;

switching means coupled to said sensing means and responsive to the amplitude of the desired value signal and to the amplitude of the electric speed signal for selectively switching the desired value signal between said controller means and said control unit; and wherein

said controller means, upon displacement of the desired value transmitter from an end position thereof corresponding to a speed of travel of zero, limiting the change in the value of the desired value signal per unit of time, below a given speed of travel, to a maximum value.

4,461,255

RPM GOVERNOR FOR A FUEL INJECTION PUMP

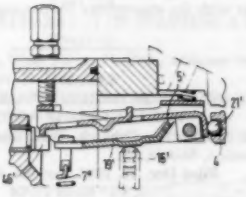
Franz Eheim, Stuttgart, and Gerald Höfer, Weissach-Flacht, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 334,715, Dec. 28, 1981, Pat. No. 4,393,835, which is a division of Ser. No. 81,285, Oct. 2, 1979, Pat. No. 4,325,337. This application Nov. 2, 1982, Ser. No. 438,441

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1978, 2845096

Int. Cl.³ F02D *31/00*

U.S. Cl. 123—357 **1 Claim**



1. In an rpm governor for a fuel injection pump of an internal combustion engine comprising,

a quantity adjustment means for determining the quantity of fuel injected, said quantity adjustment means being movable along a predetermined path between a first position at which a maximum quantity of fuel is injected and a second position at which a minimum quantity of fuel is injected,

a shaft,

a first and second governor lever means for positioning said quantity adjustment means, said first and second governor lever means being pivotable about said shaft,

an rpm adjuster means for exerting a force on said first governor lever means proportioned to the rpm of the engine and thereby moving said first governor lever means in contact with said second governor lever means,

restoring force means for exerting a force on one of said governor lever means by said rpm adjuster means,

abutment means limiting the travel path of said second governor lever means in the direction of said restoring force,

regulation intervention means, actuatable by air electronic control device which processes at least one engine parameter, for varying the setting of said rpm governor,

said regulation intervention means comprising an electromagnet coupled to said abutment means, wherein said electromagnet is a rotary electromagnet having an output shaft and including a tang which is disposed eccentrically on said output shaft, and

wherein said first governor lever means having one end which is engaged by said rpm adjuster means by said restoring means and wherein said second governor lever means having one end which is coupled to said quantity adjustment means and is engaged by said tang means.

4,461,256
DEVICE FOR FUEL INJECTION PUMPS

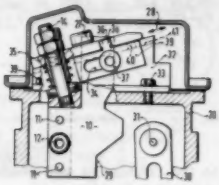
Werner Lehmann; Sieghart Maier, both of Gerlingen, and Reinhard Schwartz, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 25, 1982, Ser. No. 411,716

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1981, 3135046; Apr. 28, 1982, 3215790

Int. Cl.³ F02D *31/00*

U.S. Cl. 123—367 **8 Claims**



1. A housed device for fuel injection pumps with an adjustable scanning member for the determination of the full load injection amount, which is dependent on the rpm, and said device further provided with a support means fastened to a base, said support means arranged to hold a contour disk in a predetermined position, and said disk arranged to serve as a stop for said scanning member, characterized in that said contour disk is detachable and refastened in a reproducible position on said support means and said support means is fastened to said base by interposition of a holding element which holding element is adjustably fastened to said base and held in its fastened position after adjustment so that a first adjustment position of said support means, equipped with said contour disk is fixed and that its renewed fastening in said first adjustment position is assured, said holding element including an arresting plate provided with a slotted hole extending in a longitudinal adjustment direction of said support means whereby said arresting plate is fastened to said base by a screw means which passes through said slotted hole.

4,461,257
METHOD AND SYSTEM FOR CONTROLLING ENGINE IGNITION TIMING

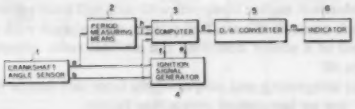
Akio Hosaka, Yokohama, and Shigeo Aono, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 26, 1981, Ser. No. 247,905

Claims priority, application Japan, Mar. 28, 1980, 55-38967; Mar. 28, 1980, 55-38968

Int. Cl.³ F02P *5/04*

U.S. Cl. 123—419 **18 Claims**



1. A method of detecting knocking of an engine having a crankshaft, comprising the steps of:

(a) detecting the rate of change of engine speed by:

(i) sensing when the crankshaft rotates through a predetermined small angle of less than 10°;

(ii) counting pulses of a fixed-frequency clock pulse signal during rotation of the crankshaft through said predetermined small angle to obtain a period value;

(iii) repeating steps (i) and (ii); and

(iv) calculating a difference between period value obtained in two separate executions of steps (i) and (ii);

(b) comparing the detected rate of change with a predetermined reference value; and

(c) producing a knocking presence signal when the detected rate of change exceeds the reference value.

4,461,258
REGULATING DEVICE FOR A FUEL METERING SYSTEM OF AN INTERNAL COMBUSTION ENGINE

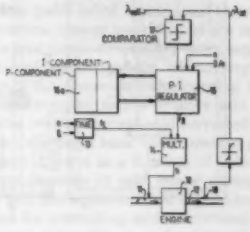
Wolfram Becker, Eberdingen; Albrecht Clement, Kornwestheim, and Rolf Däumer, Weil der Stadt, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 9, 1981, Ser. No. 300,711

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1980, 3039436

Int. Cl.³ F02M *51/00*

U.S. Cl. 123—440 **5 Claims**



1. A regulating device for a fuel metering system of an internal combustion engine comprising:

a sensor in the exhaust tube producing a sensor signal,

a metering signal generating circuit including a P-I regulator having a memory means wherein the individual P components and the slope values for the I components are stored in said memory means for positive and negative signal waveforms, whereby the values for the P and I components stored in said memory means are selectively assymmetrical or symmetrical,

said regulator producing metering signals in accordance with engine operating characteristics and the sensor signal, said operating characteristics include said individual components as regulating parameters stored in said memory means, and

means for selectively recalling said parameters from said memory means in accordance with said engine operating characteristics.

4,461,259
DISTRIBUTOR TYPE INJECTION PUMP FOR FEEDING FUEL TO AN INTERNAL COMBUSTION ENGINE

Manuel Roca-Nierga, Barcelona, Spain, assignor to SPICA S.p.A., Leghorn, Italy

Continuation of Ser. No. 328,805, Dec. 9, 1981, abandoned. This application Nov. 4, 1983, Ser. No. 549,013

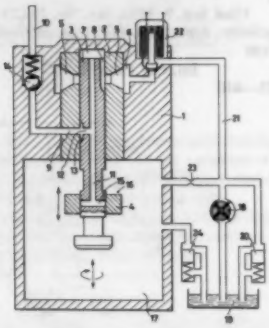
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1980, 3049367

Int. Cl.³ F02M *41/00*

U.S. Cl. 123—449 **1 Claim**

1. An injection pump for feeding fuel to an internal combustion engine comprising a housing, a pumping chamber within said housing, a piston-distributor mounted for reciprocal and rotary motion within said pumping chamber, said piston-distributor including an end portion disposed in a discharge chamber of said housing, first duct means for delivering excess fuel from said pumping chamber into said discharge chamber when a bore of said first duct means is placed in fluid communication

with said discharge chamber, means for regulating the closing of said bore, second duct means for delivering pressurized fuel from said pumping chamber to an internal combustion engine, a feed pump for delivering fuel from a fuel source through third duct means into said pumping chamber, solenoid valve means for controlling fuel flow between first and second portions of said third duct means, said third duct means first portion being disposed upstream of said solenoid valve means and said third duct means second portion being disposed downstream of said solenoid valve means, said third duct means second portion being in free fluid communication with said discharge chamber through said first duct means even when said solenoid valve means closes fluid communication between



said third duct means first and second portions, fourth duct means between said third duct means first portion and said discharge chamber for placing the same in fluid communication with each other, means for constricting fuel flow through said fourth duct means to thereby maintain a pressure differential between said discharge chamber and said third duct means first portion, first regulator valve means between said fuel source and said third duct means first portion for regulating pressure in said third duct means in response to engine speed, and second regulator valve means between said fuel source and said discharge chamber for regulating pressure in said discharge chamber at all times lower than the pressure in said third duct means.

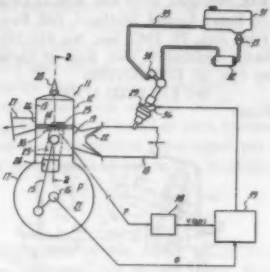
4,461,260

FUEL INJECTION SYSTEM FOR TWO-CYCLE INTERNAL COMBUSTION ENGINES

Kimihiro Nonaka, Hamamatsu, and Yukio Matsushita, Iwata, both of Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Continuation-in-part of Ser. No. 446,726, Dec. 3, 1982. This application Jun. 13, 1983, Ser. No. 503,659
Claims priority, application Japan, Jul. 1, 1982, 57-112579
Int. Cl.³ F02M *51/00*; F02B *33/04*
U.S. Cl. 123—478 **26 Claims**

1. In a fuel injection control system for an internal combustion engine comprising a chamber that varies in volume during a cycle of engine operation and fuel injection means for delivering fuel to an air charge, the improvement comprising means for controlling the fuel delivered by said fuel injection means



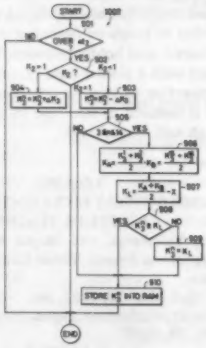
in response to the pressure in said chamber during only a predetermined portion of said cycle.

4,461,261

CLOSED LOOP AIR/FUEL RATIO CONTROL USING LEARNING DATA EACH ARRANGED NOT TO EXCEED A PREDETERMINED VALUE

Shigenori Isomura; Toshio Kondo; Yasumasa Kaji, and Akio Kobayashi, all of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 12, 1982, Ser. No. 377,542
Claims priority, application Japan, May 18, 1981, 56-75297
Int. Cl.³ F02D *5/00*
U.S. Cl. 123—489 **12 Claims**



1. A method for controlling air/fuel ratio in an internal combustion engine equipped with a closed loop control system which controls the air/fuel ratio in accordance with an output signal of a sensor detecting the air/fuel ratio, comprising the steps of:

(a) integrating said output signal from said sensor for obtaining an integration correction factor;

(b) detecting the operational condition of said engine;

(c) renewing an engine condition correction factor read out from a memory, in which a plurality of engine condition correction factors are prestored, by using said integration correction factor where one of said engine condition correction factors corresponding to the operational condition of said engine is renewed;

(d) limiting the value of said engine condition correction factors so as not to exceed a predetermined value, which is variable in relation to the engine operational conditions; and

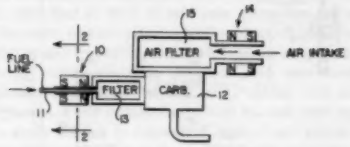
(e) controlling the air/fuel ratio by correcting a standard value, which is obtained on the basis of the operational parameters of said engine, by said integration correction factor and said engine condition correction factor selectively read out from said memory in accordance with the engine operational condition.

4,461,262

FUEL TREATING DEVICE

Edward Chow, 1009 W. 47th Ave., Vancouver, British Columbia, Canada V6M 2L3

Filed Jan. 16, 1981, Ser. No. 225,786
Int. Cl.³ F23D *21/00*; F02B *75/10*
U.S. Cl. 123—536 **14 Claims**



1. A fuel treating device for a combustion chamber having a hydrocarbon fuel inlet line and an oxygen inlet line, comprising:

a pair of substantially diametrically opposed magnets longitudinally positioned around the fuel inlet line with the south magnetic pole of each magnet located furthest from the combustion chamber; and

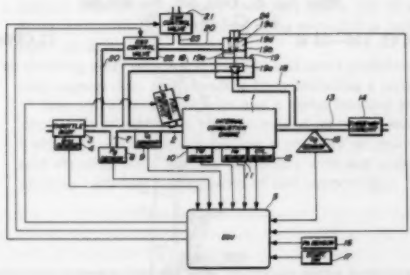
a pair of substantially diametrically opposed magnets longitudinally positioned around the oxygen inlet line with the south magnetic pole of each magnet located furthest from the combustion chamber.

4,461,263

ELECTRONIC FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES HAVING EXHAUST GAS RECIRCULATION CONTROL DEVICES

Shumpei Hasegawa, Niiza, Japan, assignor to Honda Motor Co., Ltd., Tokyo, Japan

Filed Nov. 18, 1982, Ser. No. 442,578
Claims priority, application Japan, Nov. 20, 1981, 56-186633
Int. Cl.³ F02M *25/06*; F02B *3/08*; F02D *17/00*
U.S. Cl. 123—571 **5 Claims**



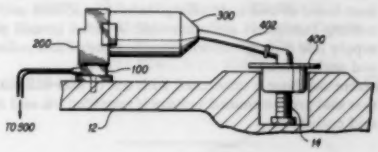
1. In an electronic fuel injection control system for use with an internal combustion engine of the type having an intake passage, an exhaust passage, a throttle valve arranged in said intake passage, and at least one fuel injection valve disposed to inject fuel being supplied to said engine, a valve opening period of which determines the fuel injection quantity, the combination comprising: a first sensor for detecting a value of engine rpm; a second sensor for detecting a value of absolute pressure in said intake passage of said engine at a location downstream of said throttle valve; a third sensor for detecting a value of ambient atmospheric absolute pressure; an exhuast gas recirculation passage communicating said exhaust passage of said engine with said intake passage of same at a location downstream of said throttle valve; an exhaust gas recirculation valve arranged across said exhaust gas recirculation passage; means for determining a desired value of the valve opening of said exhaust gas recirculation valve as a function of values of engine rpm and absolute pressure in said intake passage detected, respectively, by said first sensor and said second sensor, and generating a command signal indicative of the determined desired valve opening value; first correcting means for determining a value of a predetermined correction coefficient as a function of values of engine rpm, absolute pressure in said intake passage, and ambient atmospheric absolute pressure detected, respectively, by said first sensor, said second sensor, and said third sensor, and correcting said desired valve opening value indicated by said command signal by the determined value of said predetermined correction coefficient, whereby a quantity of exhaust gases being recirculated through said exhaust gas recirculation passage is maintained at a constant ratio with respect to a total intake air quantity being supplied to said engine through said intake passage; means responsive to a signal indicative of the corrected valve opening value generated by said first correcting means to drive said exhaust gas recirculation valve to open through said corrected valve opening; means for determining a basic valve opening period value for said fuel injection valve as a function of values of engine rpm and absolute pressure in said intake passage detected, respectively, by said first sensor and said second sensor; second correcting means for correcting said determined basic valve opening period value as a function of values of atmospheric absolute pressure and absolute pressure in said intake passage detected, respectively, by said third sensor and said second sensor; and means responsive to an output from said second correcting means to drive said fuel injection valve to open for a period of time corresponding to said output.

4,461,264

IGNITION TRANSFORMER AND SPARK PLUG COVER ASSEMBLY

Shinichiro Iwasaki, Troy, Mich., assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 489,188, Apr. 27, 1983, abandoned, which is a continuation-in-part of Ser. No. 268,889, Jun. 1, 1981, Pat. No. 4,382,430, and Ser. No. 383,607, Jun. 1, 1982. This application Nov. 14, 1983, Ser. No. 550,734
Int. Cl.³ F02P *3/02*
U.S. Cl. 123—635 **10 Claims**



1. An ignition transformer and spark plug cover assembly adapted for mounting on an internal combustion engine for application of ignition signals from an ignition circuit to a respective engine spark plug, comprising:

connector means adapted to be electrically connected to said ignition circuit by means of low tension conductors and fixedly fastened to said engine in close proximity to said respective spark plug;

a transformer assembly, including an ignition transformer, mechanically connected to and supported by the connector means; and

a cover member adapted for making electrical connection

with a respective spark plug, comprising a high tension conductor connected to the ignition transformer.

4,461,265

IGNITION TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

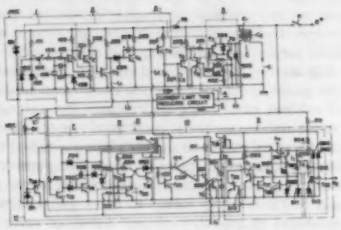
Noboru Sugiura, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 080,202, Oct. 1, 1979, Pat. No. 4,367,712. This application Nov. 22, 1982, Ser. No. 443,560

Claims priority, application Japan, Sep. 29, 1978, 53-119350; Mar. 7, 1979, 54-25591; Mar. 7, 1979, 54-27160

Int. Cl.³ F02P *3/04*

U.S. Cl. 123—651 **6 Claims**



1. An ignition control system for an internal combustion engine comprising:

means for generating a periodical signal representing basic ignition timing, the value of which changes in accordance with the rotation of said engine;

an ignition coil having a primary side and a secondary side, said secondary side being coupled to an ignition plug to ignite fuel supplied to said internal combustion engine;

a power output circuit coupled to the primary side of said ignition coil for controlling current flowing through said ignition coil, said power output circuit having an on-stage and an off-stage;

a control circuit for controlling said power output circuit, said control circuit including controlling transistors for controlling the duration of said on-stage of the output circuit in accordance with said periodical signal; and

a first transistor including an emitter and a base and a plurality of collectors, said emitter being connected with a power supply line for applying an electric current to said control circuit, said base being connected with a circuit for supplying a predetermined voltage across said base and emitter and said collectors being connected with at least some of said controlling transistors so that said controlling transistors are connected in series to said power supply line through a corresponding one of said collectors and said emitter,

wherein said base is connected with one of said collectors so that said predetermined voltage is provided via said one of said collectors.

4,461,266

ADAPTIVE INCREMENTAL BLOOD PRESSURE MONITOR

Rush W. Hood, Jr., Tampa, and Richard Medero, Lutz, both of Fla., assignors to Critikon, Inc., Tampa, Fla.

Filed Apr. 29, 1982, Ser. No. 373,209

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—681 **11 Claims**

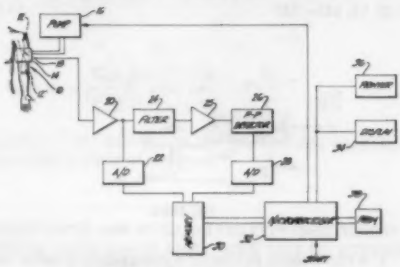
1. A method for automatically measuring blood pressure in a living animal test subject, comprising the steps of:

(a) applying a predetermined initial pressure externally to the body of the test subject adjacent a blood vessel;

(b) recording the value of the applied pressure and the amplitude of pressure pulses withing the blood vessel due to the operation of the heart of the test subject;

(c) incrementally increasing the applied pressure at least once and repeating the recording step (b) after each increment;

(d) if the amplitudes of the pulses increase with incremental increases of the applied pressure above the predetermined pressure and then decrease, (i) designating the applied pressure when the pulse amplitude is greatest as mean arterial pressure, (ii) designating as systolic pressure the applied pressure above mean arterial pressure where the pulse amplitude is a first fixed fraction of the amplitude at mean arterial pressure, and (iii) designating as diastolic



pressure the applied pressure below mean arterial pressure at which the pulse amplitude is a second fixed fraction of the amplitude at mean arterial pressure;

(e) if the amplitudes of the pulses first decrease with incremental increases of the applied pressure above the predetermined initial pressure, changing said applied pressure to a new applied pressure that is a certain amount below the predetermined initial pressure, and repeating steps (b)–(d) until mean arterial pressure and systolic pressure are determined;

(f) halting the incremental changes in applied pressure after the determination of systolic, diastolic and mean arterial pressure; and

(g) relieving the applied pressure.

4,461,267

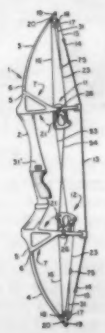
COMPOUND BOW

Gary Simonds, Gainesville; Robert Remick, Rosewood, and Gerald Hayes, Gainesville, all of Fla., assignors to Kidde Reaction Products, Inc., North Brook, Ill.

Filed Jul. 27, 1982, Ser. No. 402,245

Int. Cl.³ F41B *5/00*

U.S. Cl. 124—23 R **22 Claims**



1. A compound bow including, a center handle section, first

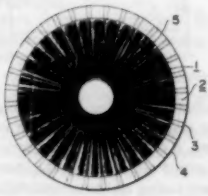
and second resilient limbs extending from opposite ends of said handle section and each having an outermost tip, upper and lower cam assemblies pivotally attached to said bow, each one of said cam assemblies provided with first and second cam segments, a bowstring having opposite ends and substantially spanning the distance between said limb tips, a pair of string cables each having opposite ends respectively joined to each said bowstring end and one of said cam assemblies, one said end of each said string cable having a cam engaging portion sheaved about one said first cam segment, a pair of power cables each having opposite ends respectively joined adjacent one said limb tip and one of said cam assemblies, one said end of each said power cable having a cam engaging portion sheaved about one said second cam segment, and one of a plurality of different sized speed/draw length replaceable cam modules attached to each of said cam assemblies adjacent to and in the same vertical plane as each said second cam segment whereby, as said bowstring is drawn from an at-rest condition said string cables pivotally displace said cam assemblies through said engagement of said string cables with said first cam segments while concurrently said second cam segments initially apply tension to respective ones of said power cables and with further rotation of the cam assembly a full bow draw length is achieved as said power cables are subsequently sheaved about preselected ones of said cam modules.

4,461,268

DIAMOND SAW

Jiro Inoue, 6-5-303, Kami Tsuruma 5-chome, Sagamihara-shi, Kanagawa-ken, Japan

Filed Jan. 4, 1982, Ser. No. 336,953
Int. Cl.³ B28D *1/04*
U.S. Cl. 125—15 **13 Claims**



1. A diamond saw for cutting hard materials such as stone, rock or concrete, comprising:

a support disc having an outer periphery and a pair of side faces, a plurality of corrugations being provided in each of said side faces; and,

an abrading body which is secured to said outer periphery of said support disc, said abrading body including a mixture of diamond abrasive particles and a metal bonding powder, a pair of side faces being provided on said abrading body with each side face having a plurality of grooves, said abrading body grooves coinciding with and communicating with said corrugations of said support disc.

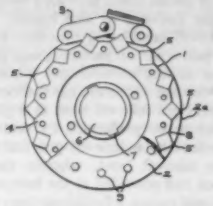
4,461,269

STONECUTTER SPROCKET HAVING REPLACEABLE CARBIDE STEEL TEETH

David W. Elliott, Bedford, Ind., assignor to Elliott Stone Company, Inc., Bedford, Ind.

Filed Feb. 26, 1982, Ser. No. 352,756
Int. Cl.³ B28D *1/04*
U.S. Cl. 125—21 **16 Claims**

1. A sprocket for a stonecutter comprising a generally circular wheel, having teeth mounting areas arranged about the periphery of said wheel and generally square shaped teeth removably attached in said teeth mounting areas, so that a



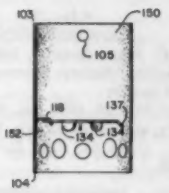
corner of each square tooth extends outwardly from the center of the wheel.

4,461,270

CHARCOAL STARTER-BURNER

Richard A. Sutter, 7215 Greenway, University City, Mo. 63130

Continuation-in-part of Ser. No. 100,517, Dec. 5, 1979, Pat. No. 4,321,907. This application Mar. 22, 1982, Ser. No. 360,620
Int. Cl.³ F24B *3/00*
U.S. Cl. 126—25 B **5 Claims**



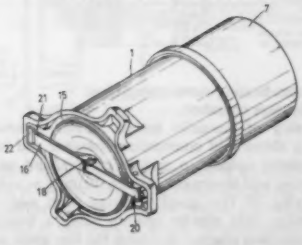
1. In a charcoal starter-burner having an elongated, open-ended, tubular housing, the improvement comprising a grate hinged to said housing on a hinge axis defining a side of said grate of greater extent and a side of lesser extent, said grate being substantially planar on a said side of greater extent and being bent down from the said plane to define a lip on the said side of lesser extent, said lip being at an angle of between 30° and 50° from the upper surface of the planar side of greater extent of said grate.

4,461,271

PORTABLE GAS FIRING APPARATUS

Bor L. Juang, 7, La. 43, Min-Juu Rd., Hsinchu, Taiwan

Filed Apr. 21, 1982, Ser. No. 370,153
Int. Cl.³ F24C *5/20*; F23Q *2/00*
U.S. Cl. 126—38 **3 Claims**



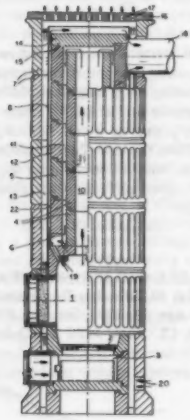
2. A portable gas firing apparatus for cooking, heating, etc.

having a casing, a common partition dividing said casing into two chambers with one disposed above the other, a burner extending upwardly from the common partition of said two chambers with a nozzle projecting outwardly of said upper chamber, a control means being provided beneath said burner for controlling gas delivery to said burner, a downwardly extending gas take-off head being provided at the bottom of said burner from said common partition, said gas take-off head having an annular sealing member and a coaxial finger, the lower chamber receiving a pressure gas fuel container which is connected with said gas take-off head in a gas-tight position and being adapted to be perforated by said finger with an upward pressure for the escape of gas fuel to said burner through said gas take-off head, wherein the improvement comprises, an open end provided at the bottom of said casing for easy access to said casing, a flexible springy member having a first and second end being disposed across said open end with the first end thereof movably attached thereto, and the second end of said flexible member being contractible when said flexible member is bent upward and capable of being in releasable attachment relative to said open end in its extending position so as to clamp said gas fuel container with an upward pressure, said flexible springy bar being formed by two aligned bars springily coupled together and further including a spring loaded pin, said two bars being pivotally coupled together by said spring load pin for properly positioning the pressure gas fuel container relative to the coaxial finger to ensure proper escape of the gas therefrom.

4,461,272
KACHELOFEN

Peter Larsson, O. Schmiedgasse 7, A-8530 Duetschlandsberg, and Franz Schaffer, Mittlerer Bahnweg 3, A-8523 Frauenthal a.d.L., both of Austria

Filed May 25, 1982, Ser. No. 381,776
Claims priority, application Austria, May 26, 1981, 2367/81
Int. Cl.³ F24C *15/08*
U.S. Cl. 126—64 **7 Claims**

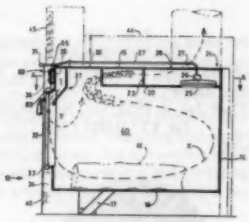


1. A room-heating stove comprising:
a combustion chamber;
a plurality of coaxially nested tubular ceramic columns rising above said combustion chamber and including an innermost column, a middle column and an outermost column, said innermost column forming a central channel carrying off flue gases evolving from said combustion chamber, said middle column being a boundary of an intermediate channel in which the flue gases ascending in said central channel are guided downward, said outermost column bounding an external channel; and
a metallic partition coaxial with said columns radially subdividing said external channel into an annular inner section and an annular outer section, said inner section communicating with said intermediate channel for conducting said flue gases upwardly toward an exhaust near the top of said outermost column, said outer section being open at the top and at the bottom thereof toward the surrounding atmosphere for conducting a flow of ambient air to be heated by the rising flue gases in said inner section through contact with said metallic partition, at least said innermost and middle columns consisting of superposed rings of heat-storing refractory material.

4,461,273
STOVE

Anthony M. Barker, Geraldine, and Robert N. Lockhart, Auckland, both of New Zealand, assignors to Kent Heating Limited, Mangere, New Zealand

Filed Jun. 9, 1981, Ser. No. 271,853
Int. Cl.³ F24C *1/14*; F23M *7/00*
U.S. Cl. 126—77 **6 Claims**

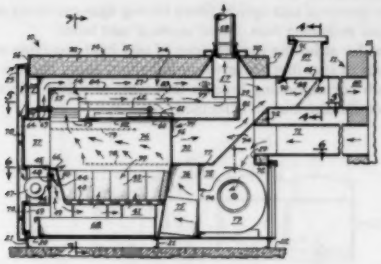


1. In a stove including a casing surrounding a combustion zone, a door in one wall of the casing, an air inlet in an upper region of the casing, a deflector in conjunction with said air inlet to deflect air within said casing past a transparent portion in a front face of said casing and to an outlet from said casing, a partition within said casing adjacent said outlet, said outlet being situated in said upper region of said casing remote from said transparent portion and said partition extends from the region of the outlet towards said transparent portion, so that in use, combustion air is drawn down inside the casing from the air inlet toward a primary combustion zone, past at least a portion of the transparent portion and then along the underside of the partition before passing by the partition into a secondary combustion zone and to the outlet, and a by-pass aperture in said partition and adjacent said outlet and closeable by a movable by-pass damper, the improvement comprising said damper is adapted to substantially float relative to said aperture so that it can be lifted away from and into and out of closing relationship with said by-pass aperture, and means to bias said damper toward said aperture, a movable control rod connected to said damper to remotely operate said damper, the connection between the damper and the control rod comprising the damper being mounted upon the control rod with a tolerance for limited floating movement of the by-pass damper relative to the control rod, and an interlocking means to lock said door in a closed position when said by-pass aperture is closed by said damper comprising a movable finger mounted on said casing, and a cam portion on said control rod operatively engaging said finger so that said finger is movable by said cam portion into and out of interlocking engagement with a portion of the door.

4,461,274
OUTDOOR FURNACE

Eugene W. Cauffman, Rte. 1, Trenton, Ky. 42286

Filed Mar. 25, 1982, Ser. No. 361,765
Int. Cl.³ F24C 1/14
U.S. Cl. 126—77 5 Claims



1. A furnace adapted to furnish warm air to a building space, comprising:

(a) a housing having enclosure walls,

(b) a conditioned air chamber within said housing having a cold air inlet and a hot air outlet for fluid communication with the building space,

(c) a fire box having front, rear, and opposed side walls, a top wall, and a lower portion, within said conditioned air chamber,

(d) a combustion chamber within said fire box having a solid-fuel opening in said front wall,

(e) a grate in the lower portion of said fire box,

(f) an ash pit in said fire box below said grate and having an ash access opening,

(g) a smokestack communicating with the upper portion of said combustion chamber and extending through an enclosure wall of said housing,

(h) a baffle wall in heat transfer relation with the lower portion of said combustion chamber and having an outer surface,

(i) a combustion air inlet extending through an enclosure wall of said housing and spaced from said baffle wall to permit air from outside said housing to be directed through said combustion air inlet, beneath said grate and into said combustion chamber,

(j) a combustion air blower mounted on said enclosure wall in fluid communication with said combustion air inlet, for directing air through said combustion air inlet into said combustion chamber,

(k) a vent door,

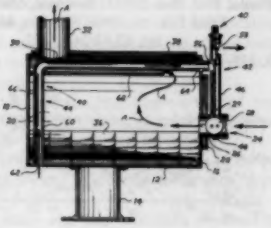
(l) hinge means mounting said vent door across said combustion air inlet whereby said vent door is normally closed over said combustion air inlet, when said blower is inoperative, said vent door being adapted to be opened by the force of air from said combustion air blower through said combustion air inlet when said blower is operative.

4,461,275
APPARATUS AND METHOD FOR BURNING WOOD

Charles D. Lucas, R.R. 1, Box 10, Salmon Arm, British Columbia, Canada (V0E 2T0)

Filed Oct. 26, 1981, Ser. No. 314,778
Int. Cl.³ F23L 13/00
U.S. Cl. 126—286 16 Claims

1. In an apparatus for burning wood of the type having a housing defining therewithin a combustion chamber for containing a supply of wood for combustion thereof, air intake damper means in said housing for admitting combustion air to said combustion chamber, said damper means being selectively openable and closeable for regulation of the quantity of said combustion air admitted therethrough, and a flue opening in said housing for exhaustion therethrough of products of said combustion of said wood, the improvement comprising duct means extending through said combustion chamber between an intake end opening through said housing at a first location therein to communication with ambient air and a discharge end opening through said housing at a second location therein upwardly spaced from said first location to communication with ambient air for non-forced passage of a portion of said ambient air through said duct means for radiant heating of said ambient air portion in said duct means during burning of said wood thereby to create a continuous natural convective flow of said ambient air through said duct means from said intake

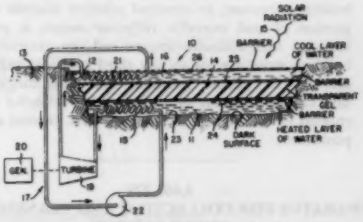


end to said discharge end for heating of said ambient air generally to the temperature of said combustion of said wood, and thermostatic sensing means disposed to receive said convective flow downstream of said discharge end to sense the temperature of said ambient air of said convective flow and operatively associated with said damper means for actuating opening and closing movements thereof respectively in response to decreases and increases in the temperature of said ambient air of said convective flow, thereby to provide regulation of the admission of said combustion air through said damper means to said combustion chamber quickly and accurately in direct responsive relation to variances in the temperature of said combustion of said wood.

4,461,276
AQUEOUS GEL FOR HEAT STORAGE POND AND METHOD FOR MAKING THE GEL

Amnon Yogev, Rehovoth, and David Mahlab, Ramat Gan, both of Israel, assignors to Ormat Turbines Ltd., Yavne, Israel

Division of Ser. No. 042,452, May 25, 1979, abandoned. This application Oct. 29, 1981, Ser. No. 316,137
Int. Cl.³ F03G 7/02
U.S. Cl. 126—415 37 Claims



1. A method for the insitu production of an aqueous gel on top of a body of water constituting a heat storage liquid, the gel being transparent to solar radiation which penetrates the gel and is absorbed in the body of water, thereby constituting the latter as a solar pond, the method comprising the steps of:

(a) applying a film barrier, transparent to solar radiation and impervious to water, on top of the heat storage liquid;

(b) depositing on the barrier an aqueous solution of co-

polymerizable monomers which, upon co-polymerization in aqueous solution, form said gel and an inorganic salt, wherein the aqueous solution of co-polymerizable monomers comprises an acrylic monofunctional monomer and an acrylic bifunctional monomer; and

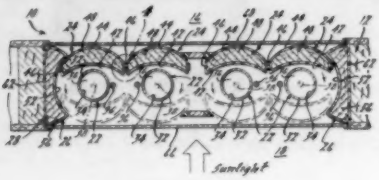
(c) co-polymerizing the solution in-situ while it is exposed to an oxygen-containing atmosphere so as to establish on said film barrier a gelled insulator which reduces conductive heat loss from the heat storage liquid to an ambient medium above said insulator.

4,461,277

THERMAL ENERGY TRANSFER DEVICE

Jorge Pardo, P.O. Box 20181, Ferndale, Mich. 48220

Filed Feb. 15, 1983, Ser. No. 466,663
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—419 **35 Claims**



1. A thermal energy transfer device adapted for installation in an exterior wall or roof of a building structure, said energy transfer device comprising:

at least one high thermal capacity collector means for receiving and storing thermal energy, said collector means extending in an axial direction;

movable thermal reflector means for reflecting thermal energy to said collector means, said movable reflector means having a thermally reflective concave inner surface thereon facing toward said collector means and a convex outer surface facing away from said collector means, said movable reflector means extending in an axial direction generally parallel to but spaced from said collector means;

at least one fixed reflector means extending in an axial direction generally parallel to but spaced from said collector means and being disposed laterally of said movable reflector means and said collector means, said fixed reflector means having a thermally reflective concave lateral surface thereon facing toward said collector means; and

actuating means for rotating said movable reflector means about said collector means to a first position wherein at least a portion of said movable reflector means is positioned between said collector means and the interior of building structure, to a second position wherein at least a portion of said movable reflector means is positioned between said collector means and the exterior of said building structure, or to any third position intermediate said first and second positions, said inner surface facing said collector means as said movable reflector means is rotated to or between any of said first, second and third positions.

4,461,278

APPARATUS FOR COLLECTING AND TRANSMITTING SOLAR ENERGY

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Mar. 25, 1982, Ser. No. 361,892
Claims priority, application Japan, Apr. 2, 1981, 56-49797
Int. Cl.³ G02B *5/14*
U.S. Cl. 126—440 **2 Claims**

1. Apparatus for collecting and transmitting solar energy, comprising:

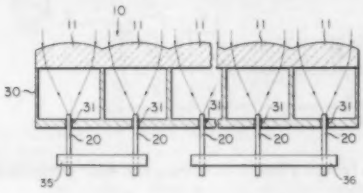
frame means having a plurality of parallel holes therein

lens means, mounted on said frame means for focusing solar light within said frame means on the axis of each of said holes

a light guide cable comprising a multiplicity of optical fibers, each of said fibers having a light-receiving end face and a light-radiating end face, said light-radiating end faces being disposed so as to illuminate a desired region remote from said frame;

a first group of said optical fibers having light-receiving end faces extending into one or more of said holes;

means for adjusting the positions of said light-receiving end faces of said first group of optical fibers along the axis of each corresponding hole so that light of a first selected spectral distribution is focused thereon;



a second group of said optical fibers having light-receiving end faces extending into one or more of said holes;

means for adjusting the positions of said light-receiving end faces of said second group of optical fibers along the axis of each corresponding hole, in a plane different from that at which the light receiving end faces of said first group of optical fibers is positioned, so that light of a second selected spectral distribution is focused thereon;

the optical fibers of said first and second groups being interspersed in said light guides cable,

whereby said desired region is illuminated with light comprising a composite of said first and second spectral distributions.

4,461,279

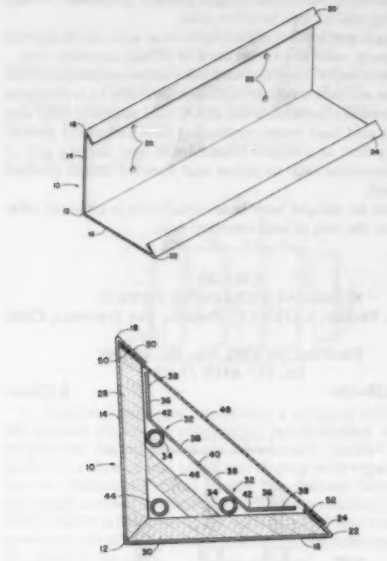
FRAME FOR ANGLED SOLAR PANELS

Richard E. Gaden, Rte. 2, Box 306, Cleveland, Okla. 74020

Filed Nov. 20, 1981, Ser. No. 323,247
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—447 **3 Claims**

1. A frame for an angled solar panel comprising a rear vertical wall connected along a lower edge to a horizontal bottom wall, the rear vertical wall having its upper portion bent along a substantially horizontal bend line to form a downwardly and forwardly projecting upper edge, the bottom wall having a outer portion spaced from its line of connection with the vertical wall being bent along a horizontal line to form an upwardly and rearwardly projecting outer edge, the upper and outer projecting edges being bent so as to lie substantially in the same inclined plane, a plurality of dimples projecting outwardly from one of said walls so as to space said wall from a surface against which the frame is to be supported, a first vertical sheet of insulation within the frame extending along the rear vertical wall from the bottom of the frame to said upper edge, a second sheet of insulation extending horizontally along the bottom wall from the first sheet of insulation to said outer edge, a solar absorber mounted within the free triangular area, a sheet of translucent material covering over the hypotenuse of the frame, the upper edge of said sheet of translucent material being inserted between said upper edge and the upper end of the first sheet of insulation and the lower end of the translucent sheet overlying said outer edge, an insulation block angled between the first and second sheets of insulation inwardly of the solar absorber, a pair of spaced horizontal tubes connected to the absorber and located between the absorber and the

angled block of insulation, and a third horizontal tube located on the opposite side of the angled block of insulation from the



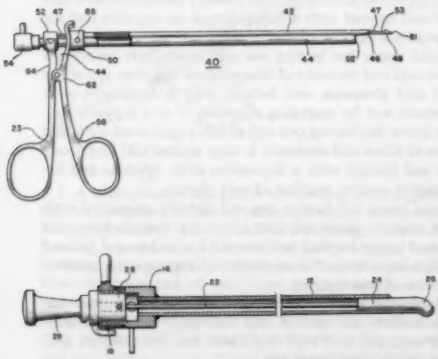
pair of horizontal tubes and connected to the pair of horizontal tubes.

4,461,280

SURGICAL INSTRUMENT AND PROCESS

George C. Baumgartner, P.O. Box 680, 890 Garfield Ave., Libertyville, Ill. 60048

Division of Ser. No. 216,374, Dec. 15, 1980, Pat. No. 4,396,021.
This application Apr. 25, 1983, Ser. No. 488,343
Int. Cl.³ A61J 1/00
U.S. Cl. 128—1.2 1 Claim



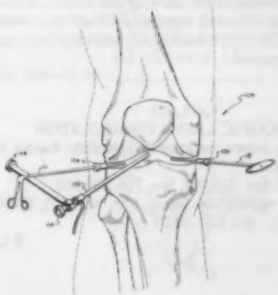
1. A medical process for treating the prostate area by selectively depositing medication to the prostate area, comprising:
selecting an elongated sheath shaped for insertion into the urethra, said sheath having an opening at one end thereof;
inserting an obturator having a shaft with a solid end portion into the sheath so that the solid end portion is retained within said opening;
inserting the obturator and sheath into the urethra through the external urethra orifice in the penis;
moving the obturator and sheath through the urethra so that the solid end portion is positioned to a location adjacent a selected area in the prostate;
removing the obturator portion from the sheath once said selected area is obtained;
selecting a medication depositing structure retaining medication wherein said structure has two adjacent parallel tubes, one of which provides a channel for receiving a viewing lens structure and the other of which includes at least one opening along the tube and a reciprocating shaft having at least one medication receiving pocket capable of being aligned with said opening upon movement of said shaft, for depositing prostate medication;
inserting said medication deposition structure into and through the sheath to said location adjacent a selected area;
viewing the location adjacent a selected area in the prostate through said viewing lens in the medication depositing structure;
piercing the prostate with said depositing structure to position the medication at said selected area;
releasing the medication from the depositing structure into the prostate at said selected area;
withdrawing the depositing structure from the sheath; and
withdrawing the sheath from the urethra.

4,461,281

ARTHROSCOPIC SURGICAL APPARATUS AND METHOD

Robert W. Carson, 1419 Circle Way, Salt Lake City, Utah 84103

Filed Jun. 15, 1977, Ser. No. 806,833
Int. Cl.³ A61B 17/00
U.S. Cl. 128—3 6 Claims

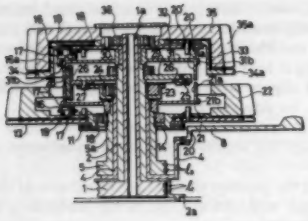


1. A surgical method comprising:
positioning a preselected quantity of distortable sleeves having a channel to extend from the anterior surface of the patient through the synovial layer of an articulate joint of a patient;
positioning a viewing apparatus through the said synovial layer; and
inserting surgical instruments through said sleeves and manipulating said instruments to effect therapeutic and surgical procedures within the joint area while viewing through said viewing apparatus .

4,461,282
MECHANISM FOR DIRECTION CHANGING OF ENDOSCOPE TOP END

Teruo Ouchi, and Kiyoshi Chikashige, both of Saitama, Japan, assignors to Kabushiki Kaisha Medos Kenkyusho, Tokyo, Japan

Filed May 2, 1979, Ser. No. 35,183
Claims priority, application Japan, May 2, 1978, 53-53093
Int. Cl.³ A61B 1/00
U.S. Cl. 128—4 **9 Claims**



1. In a device for changing a direction of end part of an endoscope in which a manual operating section is coupled to a top end part curving section through wires and said top end part curving section is curved vertically and horizontally by pulling said wires at said manual operating section, the improvement comprising:

a pair of wires adapted to drive said top end part curving section vertically and horizontally, respectively;

a pair of drive members for pulling said wires;

rotating knobs integrally coupled to said pair of drive members to control said top end part curving section vertically and horizontally, respectively;

a pair oi brake means

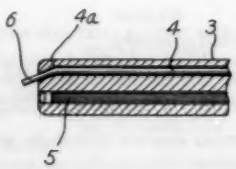
a brake member mounted to a stationary member wherein said brake member is movable with respect to said pair of brake means; and

an external operating lever for controlling the movement of said brake member, whereby said brake member abuts against said pair of brake means simultaneously by operating said external operating lever so that a vertically curving unit and a horizontally curving unit are simultaneously braked and in a braked condition either said vertically curving unit or said horizontally curving unit may be selectively actuated.

4,461,283
ENDOSCOPIC LASER COAGULATOR

Yuzuru Doi, Niiza, Japan, assignor to Kabushiki Kaisha Medos Kenkyusho, Japan

Filed Apr. 2, 1982, Ser. No. 364,651
Claims priority, application Japan, Apr. 10, 1981, 56-54531
Int. Cl.³ A61B 1/06
U.S. Cl. 128—7 **9 Claims**



1. An endoscopic laser coagulator comprising:

an elongate insertion tube having a leading end adapted to be introduced into a body and elongate laser beam conducting fibre means extending through said insertion tube,

said laser beam conducting fibre means including a forward, substantially rectilinear length portion proximate to said leading end of said insertion tube,

said length portion having a longitudinal axis which extends obliquely with respect to the axis of said insertion tube,

wherein a major length of said laser beam conducting fibre means extends through said insertion tube in a direction substantially parallel to the axis of said insertion tube, and

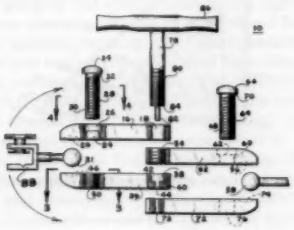
wherein said laser beam conducting fibre means are permanently bent at a region proximate to said leading end of said insertion tube to define said forward length portion thereof,

such that an oblique laser beam irradiation is obtained relative to the axis of said insertion tube.

4,461,284
SURGICAL RETAINING DEVICE

Martin L. Fackler, LAIR-CCC, Presidio, San Francisco, Calif. 94129

Filed Sep. 30, 1982, Ser. No. 430,648
Int. Cl.³ A61B 17/02
U.S. Cl. 128—20 **6 Claims**



1. A device for holding an object in a predetermined orientation relative to a fixed support comprising:

a rod,

a stem having a smaller diameter than said rod and coaxially integral with one end of said rod to form an abutment at the juncture of said stem with said rod,

a first upper bar having one end slidably associated with said rod and formed with a depression at its opposite end for engaging a portion of said object,

a second upper bar having one end operatively associated with said rod on said rod intermediate said first upper bar and said abutment and formed with a depression at it opposite end for engaging a portion of said support,

a first lower bar having one end slidably associated with said stem to allow said abutment to urge against said first lower bar and formed with a depression at its opposite end for engaging another portion of said object,

a second lower bar having one end slidably associated with said stem to place said first lower bar intermediate said second upper bar and said second lower bar and formed with a depression at its opposite end for engaging another portion of said support,

a first fulcrum operatively engaged with said first upper bar intermediate said ends of said first upper bar and detachably engaged with said first lower bar intermediate said ends of said first lower bar,

a second fulcrum operatively engaged with said second upper bar intermediate said ends of said second upper bar and detachably engaged with said second lower bar intermediate said ends of said second lower bar, and

means associated with said rod for urging said abutment against said first lower bar to separate said ends of said first and second lower bars at said stem from said ends of

said first and second upper bars located at said rod and to cause said opposite ends of said bars to converge and respectively grasp said object and said support.

4,461,285

MANUAL MASSAGER

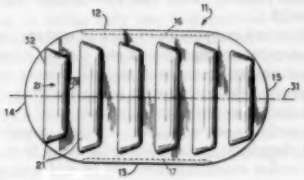
Olivier Courtin, 7, rue Guénégaud, 75006 Paris, France

Filed Dec. 8, 1981, Ser. No. 328,677

Claims priority, application France, Dec. 9, 1980, 80 26113; Dec. 2, 1981, 81 22589

Int. Cl.³ A61H *7/00*

U.S. Cl. 128—62 R 23 Claims



1. A manual massager comprising a grasping block having the general shape of a rectangular parallelepiped, transverse projections having the shape of mutually parallel teeth attached to a face of said block and sloping with regard thereto and of substantially equal length, the distance between two operating zones of neighboring teeth being selected to provide WETTERWALD massaging effect when the massager is moved on the skin of a person in the direction corresponding to the slope of the teeth.

4,461,286

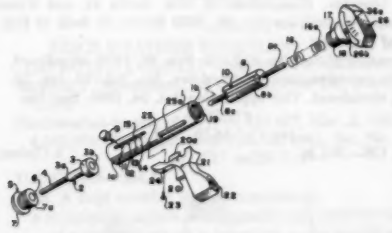
CHIROPRACTIC INSTRUMENT

Roy W. Sweat, 4735 River Ct., Duluth, Ga. 30328

Filed Mar. 15, 1982, Ser. No. 357,979

Int. Cl.³ A61F *5/00*

U.S. Cl. 128—69 9 Claims



1. A chiropractic instrument comprising an elongated housing, an elongated thrust pin mounted within said housing and having one end projecting outwardly through one end of said housing, a percussion device reciprocably mounted within said housing and arranged with one part thereof normally spaced from the inner end of said thrust pin, releasable latch means arranged so as normally to secure said percussion device against reciprocable movement within said housing, and energy storage means arranged to impart bodily movement to said percussion device toward and into impingement with the inner end of said thrust pin in coordination with release of said latch means so as to establish an impulse wave along the length of said thrust pin the velocity of which is determined by the square root of the ratio of the Young's modulus to the density of the thrust pin material so that at the patient thrust pin interface and dependent on the impedance match, a portion of the energy imparted to the thrust pin is transmitted to the patient and a portion is reflected back to the percussion device and without imparting significant bodily movement to said thrust pin.

4,461,287

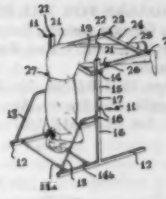
PORTABLE EXERCISE AND TRACTION APPARATUS

Hiroshi Takahashi, 153 E. Whittier Blvd., Ste. A, LaHabra, Calif. 90631

Filed Mar. 25, 1982, Ser. No. 361,743

Int. Cl.³ A01B *1/02;* A61H *1/02*

U.S. Cl. 128—75 16 Claims



1. A portable exercise and traction apparatus, comprising:

a pair of spaced upstanding stanchions;

spacing means bridgingly connected to said stanchions and rigidly maintaining them in parallel relationship;

a horizontal body supporting member immovably mounted to said stanchions and adapted to support the full weight of the body upon the user's upper thighs;

leg restraining means rigidly mounted to said stanchions, said restraining means including a cross member positioned generally parallel to, and spaced from said body supporting member for restraining engagement by the user's lower extremities when the user's upper body depends vertically from said body supporting member;

stabilizing means associated with said stanchions for rigidly maintaining said stanchions in a vertical position; and

mounting means on said stanchions for selectively positioning said leg restraining means alternatively in vertical or horizontal alignment with said body supporting member.

4,461,288

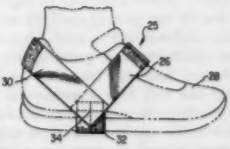
MID-HIND FOOT STABILIZER

R. Stephen Curtis, 2828 Lemmon Ave., Dallas, Tex. 75204

Filed Aug. 18, 1983, Ser. No. 524,428

Int. Cl.³ A61F *5/04*

U.S. Cl. 128—80 H 18 Claims



1. An apparatus for stabilizing movement of the infratalar joints of the foot, comprising:

first means for applying a dispersive force about the region of the dorsum of the foot and directed along the line of motion of the infratalar joints, said first means slideable over the dorsum of the foot;

second means for applying a dispersive force about the region of the tendo-calcaneus proximate the attachment point thereof to the calcaneus bone and directed towards the region of the posterior talo-calcanean joint;

third means for applying a dispersive force about the sole of the foot in the region proximate the attachment poi[illegible] of the

plantar fascia to the calcaneus bone and directed towards the infratalar joints, such that said first, second and third dispersive force means reduced movement of the infratalar joints during exercise; and

means for adjusting the relative force and position of said first, second and third dispersive force means such that said first and second dispersive force means can have differing forces for application to the infratalar joints.

4,461,289

SOLE INCORPORABLE INTO PLASTER CAST BANDAGES FOR THE FOOT

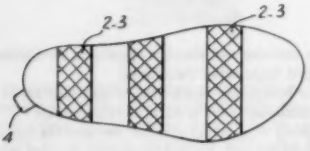
Philippe Didier, Rue Gustave Deleris, Bulgneville - 88140 Contrex, and Francis Vermonet, 1 Rue Kennedy, Neufchateau 88300, both of France

Filed Apr. 19, 1982, Ser. No. 369,635

Claims priority, application France, Apr. 28, 1981, 81 08437

Int. Cl.³ A61F *5/01*

U.S. Cl. 128—83.5 **2 Claims**



1. A sole for providing a plaster cast bandage for the foot, comprising a body made of a rigid material whose upper surface corresponds substantially to a human foot shape and size and whose lower surface comprises at least one bearing surface constituted by at least one protruding transverse band, said sole being formed with a rear lug having a length substantially equal to the projection of said at least one transverse band and extending obliquely and toward the outside from the outer lateral edge of the rear portion of the sole heel.

4,461,290

HEARING PROTECTORS

Ross Gardner, Jr.; Robert N. Falco, and John P. Stallings, all of Indianapolis, Ind., assignors to Cabot Corporation, Kokomo, Ind.

Continuation of Ser. No. 185,046, Sep. 8, 1980, abandoned, which is a continuation-in-part of Ser. No. 091,414, Nov. 5, 1979, abandoned. This application Nov. 29, 1982, Ser. No. 445,111

Int. Cl.³ A61F *11/02*

U.S. Cl. 128—152 **9 Claims**

1. In a hearing protector of the type comprising a generally U-shaped spring headband having affixed to each of the opposed end portions thereof an inwardly directed ear canal contacting member, each said member having a first end portion adapted to be urged by said spring headband into ear canal obturating relationship and an opposite second end portion having external dimensions small enough to be surrounded by the pinna of the ear and being directly connected to a respective opposed end portion of said headband, the improvement which comprises, in combinations:

a. said first end portion of each of said ear canal contacting members comprising a conically shaped obturating element having an included angle between about 20 and 30°, said obturating element having a closed inner end and an open outer end, said inner end of said obturating element being of a size and shape adapted for partial insertion into the ear, said inner end of said obturating element being of a smaller diameter than said outer end of said obturating element, at least that portion of said obturating element which is insertable in the ear comprising a soft, compliant and hollow capsular element, said capsular element being at least partially filled with a compliant or resilient filler material;

b. said second end portion of each of said ear canal contacting members comprising an end closure member secured to said obturating element, said end closure member being in mating relationship with said obturating element, said end closure member having a socket and a passageway to said socket, said passageway having a chamfered surface, said chamfered surface diverging away from said socket, said socket extending interiorly of said open outer end of said obturating element so as to lessen the tendency for the ear canal contacting members to fold upon themselves;

c. said opposed end portions of said headband each having an inwardly directed segment with a terminal ball element at its end; and

d. an articulated fixation connecting each said socket element of each said end closure member to respective ball elements of said headband, thereby to allow said ear canal contacting members to tilt about their point of articulated fixation and to conform to the ear under the urging of said headband, each said articulated fixation having a center point centrally located within said end closure member, said chamfered surface defining a conical stop surface for limiting the extent to which said ear canal contacting members can be tilted.

4,461,291

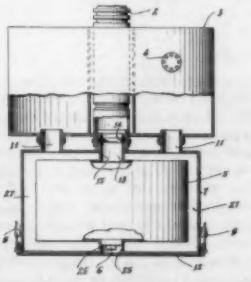
RESPIRATOR

Werner Mascher, Bismarckstr. 6, 1000 Berlin 41, and Klaus Pampuch, Neubrücker Str. 40, 1000 Berlin 28, both of Fed. Rep. of Germany

Continuation of Ser. No. 882,120, Feb. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 762,170, Jan. 24, 1977, abandoned. This application Jul. 24, 1980, Ser. No. 171,941

Int. Cl.³ A62B *7/08*

U.S. Cl. 128—202.26 **6 Claims**



1. A respirator for regenerating oxygen in exhaled air which is suitable to be safely inhaled comprising

a cartridge containing chemical means therein for trapping carbon dioxide and moisture in exhaled air and releasing oxygen therefrom;

a housing having an upper surface, a lower surface and sidewalls, said housing adapted to receive said cartridge therein;

means for removably mounting said cartridge in said housing such that said cartridge is spaced at least from said lower surface and said sidewalls of said housing to define only one channel having a single continuous flow path between said cartridge and said lower surface and said sidewalls of said housing, at least one portion of said channel communicating directly with said cartridge in fluid flow relationship therewith;

a breathing tube having one end connectable to a user and the opposite end thereof removably fluidly connectable to said cartridge;

a breathing bag coupled in fluid flow relationship to said only one channel defined between said cartridge and housing to define only one bi-directional flow path between said breathing tube, said cartridge, said channel and said breathing bag, whereby exhalation of air through said breathing tube applies regenerated oxygen from said cartridge through said channel and to said breathing bag, and inhalation through said breathing tube removes oxygen from said breathing bag which is carried through said channel, through said cartridge, and through said breathing tube;

said housing including a tubular extension affixed to the upper surface thereof, said opposite end of said breathing tube being mounted on said tubular extension, said cartridge including tube means extending therefrom in alignment with said tubular extension, said tube means being slidably and sealingly inserted within said tubular extension;

said breathing bag being coupled to said channel by at least two separate passageways defined on the upper surface of said housing, each of said passageways being located on opposed sides said breathing tube;

all air exhaled into said breathing bag or inhaled from of said breathing bag passing through said channel and said cartridge;

said lower surface of said housing being removably mounted on said housing whereby said cartridge can be quickly and easily removed from said housing through the bottom of said housing.

4,461,292

COLD WEATHER BREATHING DEVICE WITH IMPROVED CONDUIT AND VALVE ARRANGEMENT

Anthony P. Montalbano, 29 Hitching Post La., Glen Cove, N.Y. 11542

Continuation-in-part of Ser. No. 239,497, Mar. 2, 1981, Pat. No. 4,441,494. This application Feb. 24, 1982, Ser. No. 350,441

Int. Cl.³ A62B *7/00*

U.S. Cl. 128—204.17 **19 Claims**

15. A cold weather device comprising:

a mouthpiece which is engageable only with the mouth area of a user and which is insertable in the mouth of the user, said mouthpiece not extending to the nose of the user and leaving the nose of the user uncovered;

a valve housing coupled to said mouthpiece and in air communication with only the mouth of the user via said mouthpiece, and being out of air communication with the nose of the user;

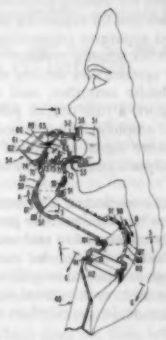
a conduit coupled to an extending downwardly from said valve housing and in selective air communication with said mouthpiece via said valve housing;

a first valve in said valve housing and in air communication with said conduit and mouthpiece for providing an air communication path between said conduit and said mouthpiece when the user inhales, and for blocking said air communication path between said conduit and mouthpiece when the user exhales;

an exhaust opening in said valve housing and being in selective air communication with said mouthpiece for selectively exhausting exhaled air to the atmosphere;

a second valve in said valve housing and coupled between said exhaust opening and said mouthpiece for providing an air communication path between said mouthpiece and said exhaust opening when the user exhales, and for blocking said air communication path between said exhaust opening and mouthpiece when the user inhales; and

a shield unit having a top end, opposite sides, a bottom end, an inner surface, an outer surface and a substantially central portion, said shield unit including a substantially air impervious shield member coupled to an end portion of said conduit remote from said mouthpiece and a first and second plurality of spaced apart projecting members extending from said inner surface of said shield member and adapted to abut against the body of a user, said projecting members defining with said shield member, when placed against the body of a user, a plurality of substantially unrestricted air passages, said first plurality of projecting members being on one side of said substantially central portion of said shield unit and defining first substantially unrestricted air passages extending from around a side periphery of said shield member to said substantially central portion of said shield member, said second plurality of projecting member being on the other side of said substantially central portion of said shield unit and defining second substantially unrestricted air passages extending from



around the other side periphery of said shield member to said substantially central portion of said shield member, a substantially central air passage being defined at said substantially central portion of said shield member between said first and second pluralities of projecting members, and said shield unit further including guide means at least at the top end of said shield unit for guiding air from said air passages to said substantially central air passage and to prevent air from passing out of said shield unit at the top end except through said conduit, said substantially central air passage being in substantially unrestricted air communication with said first and second substantially unrestricted air passages, said first and second substantially unrestricted air passages substantially unrestrictedly opening to side peripheries of said shield unit and extending substantially unrestrictedly from at least said openings at said side peripheries of said shield unit to said substantially central air passage, said shield unit being coupled to said conduit such that said first and second substantially unrestricted air passages are in substantially unrestricted air communication with the interior of said conduit via said substantially central air passage to provide substantially unrestricted flow of air from the periphery of said shield unit to the interior of said conduit and to said mouthpiece, whereby said shield unit is adapted to be placed against a body portion of a user to provide substantially unrestricted open-ended air flow through said first

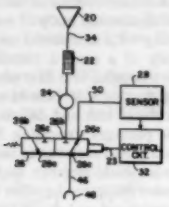
and second substantially unrestricted air passages, said substantially central air passage and to said mouthpiece via said conduit whereby the body heat of the user heats cold air passing therethrough.

4,461,293

RESPIRATING GAS SUPPLY METHOD AND APPARATUS THEREFOR

Kevin C. S. Chen, Lanham, Md., assignor to Kircaldie, Randall, and McNab, Wethersfield, Conn.

Filed Dec. 3, 1982, Ser. No. 446,810
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—204.23 **1 Claim**



1. An apparatus for sensing pressure direction in an in vivo respiratory system and for supplying gas to said in vivo respiratory system, said apparatus comprising:

sensing means for sensing pressure direction in said in vivo respiratory system, said sensing means comprising:

a biased fluidic amplifier, said amplifier comprising a control port, a first output port, and a second output port, said amplifier being biased so that, unless a negative pressure signal is applied at said control port, a fluidic output signal normally occurs at said first output port;

fluid pressure-to-electric conversion means, said coversion means having a positive pressure input port thereof fluidically connected to said second output port of said biased fluidic amplifier for receiving a fluidic output signal from said biased amplifier and for converting said fluidic signal to an electrical signal;

a source of gas to be supplied to said in vivo respiratory system;

valve means responsive to said electrical signal of said sensing means for selectively applying gas to said in vivo respiratory system;

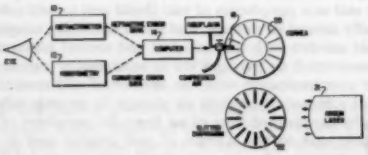
means for fluidically communicating said source of gas to said valve means; and, means for fluidically communicating said valve means to said in vivo respiratory system.

4,461,294

APPARATUS AND PROCESS FOR RECURVING THE CORNEA OF AN EYE

Neville A. Baron, Medical Plaza - #66 Rte. 46, Dover, N.J. 07801

Filed Jan. 20, 1982, Ser. No. 340,978
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—303.1 **6 Claims**



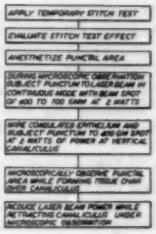
1. A process for recurving the cornea of an eye which comprises disposing light-absorbing color bodies in the cornea and thereafter vaporizing at least a portion of said color bodies by applying energy thereof sufficient to effect vaporization thereof, said vaporization being carried out according to a predetermined pattern and generating thereby corneal-recurving scar tissue in said cornea according to said predetermined pattern.

4,461,295

LASER PUNCTAL OCCLUSION

Robert S. Herrick, 1300 N. Vermont Ave., Suite 401, Los Angeles, Calif. 90027

Filed Oct. 21, 1983, Ser. No. 544,283
Int. Cl.³ A61B *3/10, 17/36*
U.S. Cl. 128—303.1 **7 Claims**


APPLY TEMPORARY STITCH TEXT
EVALUATE STITCH TEST EFFECT
ANESTHETIZE PUNCTAL AREA
DURING MICROSCOPIC OBSERVATION SUBJECT PUNCTUM TO LASER BEAM IN CONTINUOUS MODE WITH BEAM SPOT OF 600 TO 700 SMM AT 2 WATTS
WIPE CONSULATED EPITHELIUM AND SUBJECT PUNCTUM TO 400 SM SPOT AT 2 WATTS OF POWER AT VERTICAL CANALICULUS
MICROSCOPICALLY OBSERVE PUNCTAL AREA WHILE FORMING TISSUE CHAR DEEP CANALICULUS
REDUCE LASER BEAM POWER WHILE RETRACTING CANALICULUS UNDER MICROSCOPIC OBSERVATION

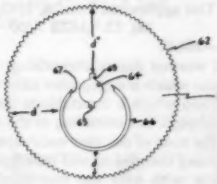
1. A method for treating external eye conditions due to a deficiency of retained constant tears by punctal occlusion to at least partially restrict the canaliculus including the steps of applying a local anesthetic to a punctal region of an eye to be treated, stitching the punctum at least partially closed with a temporary surgical suture, observing the response of the eye condition to the closure of punctum, applying a second local anesthetic to the punctal area to be treated, subjecting the punctal area to a laser beam in a diffused pattern until the canaliculus tissue restricts the opening, and cleansing damaged tissue from the punctal area.

4,461,296

SURGICAL SAW BLADE

Joseph Hodge, 856 N. Church St., Spartanburg, S.C. 29303

Filed Apr. 16, 1979, Ser. No. 30,693
Int. Cl.³ A61B *17/14*
U.S. Cl. 128—317 **4 Claims**



1. An improved surgical saw blade for attachment to a power operated surgical saw comprising a blade portion having teeth disposed along at least a portion of an outer periphery of same and defining a cutting surface thereat, said blade portion further defining a saw connector receiving opening centrally therethrough for securement of said blade to said saw, and an arcuate guard element secured directly to a side of said blade portion, and extending outwardly from said blade portion in a direction transverse to a major axis through said blade portion defining the width of the guard element, said width

being sufficient to preclude ingress of said cutting teeth beyond a cutting depth defined by the distance between said cutting teeth and a surface of said guard element closest said teeth, the width of the guard element being less than the length of the cutting surface said guard element being located with respect to said cutting teeth to define various cut depths along the length of the cutting surface whereby a surgeonusing same may achive a predetermined cut depth by presentation of a predetermined portion of said blade to a surface to be cut.

4,461,297

FORCEPS

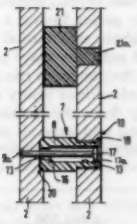
Hermann Sutter, Gundelfingen-Wildtal, Fed. Rep. of Germany, assignor to Holzhaur und Sutter Medizin-technische Gerate und Instrumente GmbH, Freiburg, Fed. Rep. of Germany

Filed Mar. 18, 1982, Ser. No. 359,429

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1981, 3110666

Int. Cl.³ A61B *17/28*

U.S. Cl. 128—321 **37 Claims**



1. A microsurgical forceps comprising:

(a) a pair of elongated legs having end portions and interconnected second portions remote from said end portion, said legs having a closed position in which said end portions are at least closely adjacent to each other, and said legs being resiliently biased relative to each other to an open position in which said end portions are remote from one another, said legs assuming said open position in the absence of a force urging said legs to said closed position, and said legs together defining a clearance in all positions from said open position to said closed position; and

(b) guide means in said clearance for guiding said legs in all positions from said open position to said closed position, said guide means being disposed entirely within the confines of and between said legs in all positions from said open position to said closed position, and said guide means including an elongated pin-shaped component on one of said legs, and a substantially circumferentially complete tubular component on the other of said legs, said components being disposed intermediate said end portions and said second portions of said legs, and said one leg having a recess which faces said tubular component and receives a portion thereof in said closed position to center said tubular component relative to said one leg, said one leg having a first surface against which said tubular component abuts in said closed position, and said other leg having a second surface facing away from said one leg, said tubular component being spaced apart from said first surface by a predetermined distance in said open position, and the length of said elongated component exceeding said predetermined distance so that a portion of said elongated component extends into said tubular component in all positions from said open position to said closed position, said predetermined distance being at most equal to the distance between said elongated component and said second surface so that said elongated component does not extend beyond said second surface in said closed position.

4,461,298

COMPOSITE SUTURES OF SILK AND HYDROPHOBIC THERMOPLASTIC ELASTOMERS

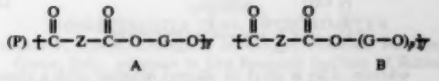
Shalaby W. Shalaby, Lebanon, N.J.; Martin Stephenson; Louise Schaap, both of Peterborough, Canada, and Graham H. Hartley, deceased, late of Peterborough, Canada (By Marilyn Hartley, personal representative), assignors to Ethicon, Inc., Somerville, N.J.

Filed Jul. 26, 1982, Ser. No. 401,661

Int. Cl.³ A61L *17/00*

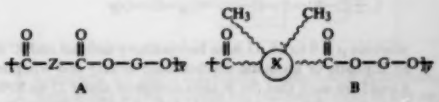
U.S. Cl. 128—335.5 **14 Claims**

1. A composite suture essentially retaining the handling qualities of silk, which, in the case of size 5–0, is capable of retaining at least 32% of its initial mechanical strength, in vivo, after eight weeks; said suture having surface barrier properties against cell infiltration comparable to those of a monofilament and tissue reaction comparable to common synthetic sutures; comprising multifilament silk embedded in a hydrophobic, limp thermoplastic elastomer, substantially all the interstices between the silk filaments being filled by said elastomer; said elastomer having a suitable molecular weight sufficient to provide a solution viscosity that is consistent with optimum diffusion into the interior of the suture structure, resulting in a high integrity matrix which does not flake when the suture is subjected to mechanical stress; said elastomer being selected from the group consisting of copolymers having the following recurring units:



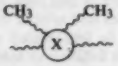
wherein each G individually represents an alkylene group of from 2 to 6 carbon atoms, and p is 9 to 15, e and f each represent a number having a value greater than 1 such that the B units comprise 50 to 80 weight percent of the copolymer and the A units comprise the remainder; wherein Z represents 1,4-phenylene, 1,3-phenylene or trans-1,4-cyclohexylene;

(Q) a copolymer consisting essentially of a multiplicity of recurring A [poly(alkylene terephthalate, isophthalate or cyclohexane-1,4-dicarboxylate)] and B [poly(alkylene dimerate)] units having the following general formula:



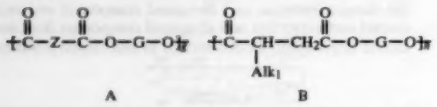
wherein x and y are integers, such that the B units com-

prise 50 to 80 weight percent of the copolymer, and the A units comprise the remainder;



denotes a branched hydrocarbon chain containing from 24 to 32 carbon atoms and Z and G are as hereinabove defined;

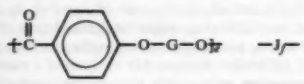
(R) a copolymer consisting essentially of a multiplicity of recurring poly(alkylene) terephthalate, isophthalate or cyclohexane-1,4-dicarboxylate, and poly(alkylene) alkyl or alkenyl succinate units having the following general formula:



A B

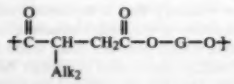
wherein Alk_1 is a linear or branched alkyl or alkenyl radical with a chain length of about 4 to 30 carbon atoms and g and h are integers such that the A units comprise 20 to 50 weight percent of the copolymer and the B units comprise the remainder and Z and G are as hereinabove defined; or,

(S) a random copolymer having the following general formula:



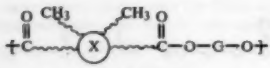
A B

wherein J is either:



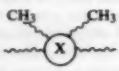
(1)

or

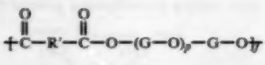


(2)

wherein Alk_2 is alkyl or alkenyl moieties with a chain length of 8 to 30 carbon atoms;



denotes a branched hydrocarbon chain with an estimated formula of $C_{32}H_{60}$, or



(3)

wherein p is 9 to 15, G is an hereinabove defined and R' is an aliphatic or aromatic disubstituted moiety and wherein e and f are such that the B units comprise about 25 to 50% by weight of the copolyester and the A units comprise the remainder.

4,461,299

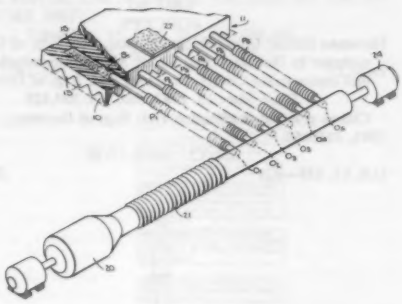
SCANNING HYPERTHERMIA TECHNIQUE

Raul Guibert, Los Angeles, Calif., assignor to Sunset Ltd., Los Angeles, Calif.

Continuation-in-part of Ser. No. 274,504, Jun. 16, 1981, Pat. No. 4,398,535, which is a continuation-in-part of Ser. No. 97,787, Nov. 27, 1979, Pat. No. 4,307,286. This application Oct. 20, 1981, Ser. No. 313,313

Int. Cl.³ A61F *7/00*

U.S. Cl. 128—399 **5 Claims**



1. A scanning thermal therapy system for a living organism having a normal body temperature, the system serving to raise the temperature of a region underlying an area of body skin to a hyperthermia level having beneficial effects, said system comprising:

A. an applicator adapted to be placed above said skin area and including a series of bores, each having an outlet for projecting hot air onto a related sub-division of the skin area; and

B. cyclical means to supply hot air at high velocity to each of said bores sequentially in the course of each operating cycle, whereby each sub-division is subjected by its associated outlet to a high-velocity stream of periodic hot air pulses separated by relatively static intervals to produce a pulsatory wave, said pulses having a high temperature level well above said normal temperature, the static intervals between the pulses having a medium temperature level somewhat above said normal temperature, the heat produced by said pulsatory wave penetrating the skin to cause the region thereunder to rise in temperature to said hyperthermia level without injury to surface tissue, heat transfer inwardly from the surface layer of the tissue taking place during said intervals to cause a reduction in the temperature of the surface layer preventing excessive heating thereof.

4,461,300

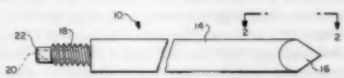
BONE AND TISSUE HEALING DEVICE INCLUDING A SPECIAL ELECTRODE ASSEMBLY AND METHOD

James M. Christensen, San Diego, Calif., assignor to Sutter Biomedical, Inc., San Diego, Calif.

Filed Jan. 18, 1982, Ser. No. 340,521

Int. Cl.³ A61N *1/04, 1/18*

U.S. Cl. 128—419 F **11 Claims**



1. A cathode electrode assembly including a cathode electrode for use in a device which expedites the healing of bone or soft tissue fractures or defects in a patient and which includes

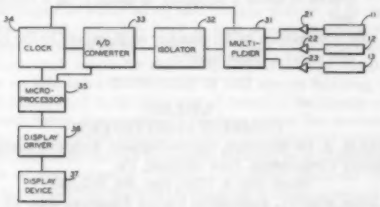
said electrode assembly and an anode electrode as well as means including an electrical power supply to produce a regulated flow of current between the anode and cathode electrodes for application through the fracture or defect site, said cathode electrode assembly comprising: said cathode electrode including a rigid, electrically conductive shaft which has a threaded outer surface section and a pointed front end so as to be readily drilled into said fracture or defect site starting at its front end by using a compatible drilling device such that the entire shaft is disposed within said patient, said shaft also including a back end segment having a back end and a well opening therein from said back end; and a flexible electrical lead wire mechanically and electrically fixedly connected at one end to the back end of said shaft within said well before the latter is drilled into the patient, said lead wire being adapted for electrical connection at its opposite end to said means including said power supply.

4,461,301

SELF ADJUSTING BIO-FEEDBACK METHOD AND APPARATUS

Leonard A. Ochs, Schenectady, N.Y., assignor to Self Regulation Systems, Inc., Redmond, Wash.

Filed Oct. 15, 1981, Ser. No. 311,631
Int. Cl.³ A61B 5/00
U.S. Cl. 128—630 **7 Claims**



1. A method of teaching self-regulation to a human subject of said subjects various physiological functions comprising the steps of;

(a) detecting a signal from said subject of a physiological function sought to be regulated

(b) digitizing said signal to provide a plurality of digitized signals overtime

(c) electronically deteriming a plurality of values, each value functionally related to a number of said digitized signals

(d) automatically determining a first statistical function of said digitized signals indicating whether said subject could adequately resolve the display of said values within scaling limits extending from an upper limit to a lower limit of a metric

(e) determining second statistical function of said digitized signals indicating whether said values will continue to fall within said scaling limits of said metric

(f) determining said scaling limits of said metric as a function of said first statistical function said second statistical function; and

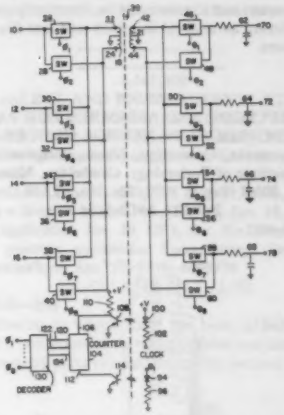
(g) displaying simultaneously said metric, its scaling limits, and said values to induce said subject to control said physiological function.

4,461,302

COUPLING OF MULTIPLE PHYSIOLOGICAL SIGNALS ACROSS AN ISOLATION BARRIER

Patrick G. Phillipps, Wayland, Mass., and Kenneth M. Ma, Yorktown Heights, N.Y., assignors to American Home Products Corporation, New York, N.Y.

Filed Mar. 19, 1982, Ser. No. 359,971
Int. Cl.³ A61B 5/00
U.S. Cl. 128—630 **5 Claims**



1. A system for coupling a plurality of physiological signals across an isolation barrier comprising:

means for receiving a plurality of physiological signals;

isolating transformer means for providing said isolation barrier between a primary winding and secondary winding thereof;

means for sampling each of the physiological signals during separate time periods for reducing residual magnetization in the isolating transformer means so as to minimize dead time between sampled signals; and

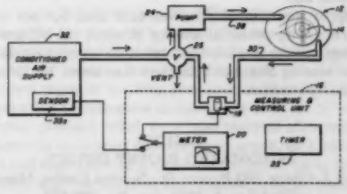
means for producing a plurality of output signals, each output signal proportional to one of said plurality of physiological signals and produced in response to secondary winding signals generated across the secondary winding.

4,461,303

NON-INTRUSIVE TEAR EVAPORIMETER

Miguel F. Refojo, Lexington, Mass., and Maurizio Rolando, Genoa, Italy, assignors to Eye Research Institute of Retina Foundation, Boston, Mass.

Filed Apr. 28, 1982, Ser. No. 372,814
Int. Cl.³ A61B 5/00
U.S. Cl. 128—630 **19 Claims**



7. Apparatus for tear evaporation measurement comprising

A. goggle-like means adapted for placement over an eye and for forming thereover a chamber substantially closed to the environment,

B. an air inlet conduit and an air outlet conduit, each of

which is connected with said goggle means for communication with the chamber formed thereby,

C. pump means connected with at least one said conduit,

D. means for sensing the humidity and the temperature of air exposed to tear-film evaporation within the chamber formed by said goggle means,

E. measuring means connected with said sensing means for providing a measure of said sensed humidity and of said sensed temperature, and

F. control means for actuating said pump means for moving air between said conduits and the chamber formed by said goggle means and alternatively for inactivating said pump means during an interval in which said tear film evaporation occurs.

4,461,304

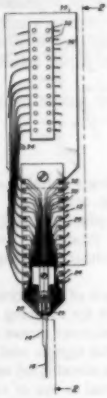
MICROELECTRODE AND ASSEMBLY FOR PARALLEL RECORDING OF NEUROL GROUPS

Michael Kuperstein, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Nov. 5, 1979, Ser. No. 91,648

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—642 **15 Claims**



1. A microelectrode having a plurality of electrode recording sites suitable for monitoring electrical activity generated by biological tissue in vivo comprising:

a fine length of insulated foil substrate having a Young's modulus of elasticity of at least 30×10^6 psi;

a plurality of electrical leads on a face of the length of insulated substrate, each terminated by a potential sensing element formed on the face of the substrate to form a recording site, at least about 15 potential sensing elements being spaced by less than 200 μm in at least one linear array along a length of the foil substrate of the microelectrode; and

an upper insulating layer over each lead but not over the terminating potential-sensing element, the volume of the length of the insulated foil substrate supporting the potential sensing elements being less than about 3×10^5 μm^3 per sensing element.

4,461,305

AUTOMATED BIOPSY DEVICE

Leonard J. Cihlay, 683 Beacon St., Newton Centre, Mass. 02159

Filed Sep. 4, 1981, Ser. No. 299,559

Int. Cl.³ A61B *10/00*

U.S. Cl. 128—754 **6 Claims**

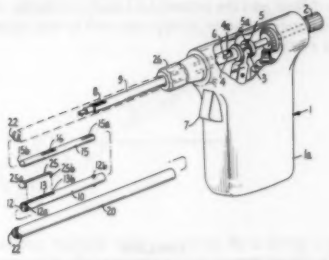
6. A hand operated apparatus for automatically extracting a sample of tissue from a body comprising

a generally cylindrical conduit having a cutting end and a remote end with the conduit having an axially facing cutting edge at the cutting end for cutting a core of tissue,

a plunger mounted inside the conduit for movement with respect to the conduit both rotationally and axially,

cutting means mounted in the conduit adjacent the cutting end for pivotal movement between a cutting position and a retracted position with the cutting means having a blade portion faired along the circumference of the conduit in the retracted position and pivotal inwardly toward the axis of the conduit to the cutting position responsive to relative rotation of the conduit and plunger, and

drive means for rotating the conduit and plunger and reciprocating the plunger whereby



(a) rotation of the conduit and plunger together with the cutting means in the retracted position permits the conduit to cut a core of tissue,

(b) relative rotation of the core and plunger moves the cutting means to the cutting position,

(c) rotation of the conduit and plunger together with the cutting means in the cutting position permits the cutting means to sever a sampling of tissue from a tissue core, and

(d) axial motion of the plunger with respect to the conduit can expel a tissue sample.

4,461,306

COMBINE HARVESTERS

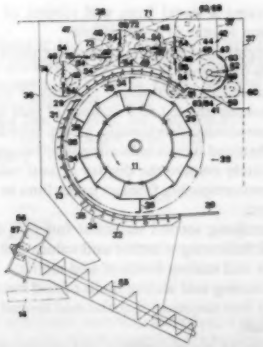
Cyriel R. J. De Busscher, Sijsele-Damme, Belgium, assignor to Sperry Corporation, New Holland, Pa.

Filed Jun. 9, 1983, Ser. No. 502,863

Claims priority, application United Kingdom, Jun. 19, 1982, 8217821

Int. Cl.³ A01F *12/00, 7/04*

U.S. Cl. 130—27 R **18 Claims**



1. A combine harvester having threshing and separating

means comprising a rotor, concave means extending at least partially around the rotor at a location above the axis of rotation of the rotor and sweeper means disposed in the vicinity of the concave means for sweeping crop material passing through the concave means away from said concave means to prevent an excessive build up of crop material on said concave means.

4,461,307

APPARATUS FOR FORMING A TOBACCO STREAM IN CIGARETTE MAKING MACHINES OR THE LIKE

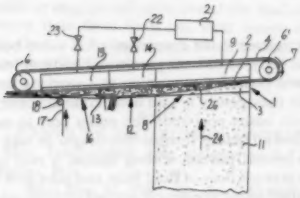
Gottfried Hoffmann, Schwarzenbek, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Jun. 28, 1982, Ser. No. 393,079

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3151002

Int. Cl.³ A24C *5/14*

U.S. Cl. 131—84 B **4 Claims**



1. An apparatus for forming a tobacco stream for the production of rod-shaped smokers' articles and the like, comprising a tobacco feeding duct; a tobacco channel having a stream building section adjacent to tobacco feeding duct, said channel further having an air-permeable bottom wall, side walls flanking said bottom wall and at least one additional section adjacent said stream building section; an air-permeable tobacco band arranged to travel along said bottom wall so as to transport the stream, which is built in said stream building zone from tobacco supplied by said duct, into said additional section of said channel; means for removing surplus tobacco from the stream on said band downstream of said stream building section, as considered in the direction of travel of the stream with said band; means for applying a predetermined first suction to tobacco in said stream building section; and means for applying a less pronounced second suction to tobacco in said additional section of said tobacco channel to thereby eliminate eddy currents and development of turbulences in those layers of the tobacco stream downstream of said stream building zone which are remote from said band.

4,461,308

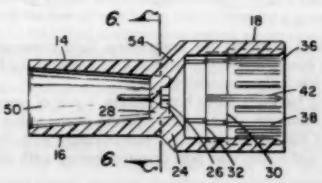
TOBACCO SMOKE FILTERS

Maurice Le Cover, Los Angeles, Calif., assignor to Leslie N. Alkman, Corona del Mar, Calif.

Filed Jun. 12, 1981, Ser. No. 273,132

Int. Cl.³ A24D *3/02, 3/04*

U.S. Cl. 131—198 R **15 Claims**



1. A cigarette filter comprising:

a tubular member having an upstream end for receiving the end of a cigarette and a downstream end serving as a smoker's bit;

a barrier wall extending across said member at a point intermediate said upstream and said downstream ends;

an opening in the central region of said barrier affording communication past said barrier from said upstream to said downstream end; and

a target disposed adjacent to and entirely downstream from said barrier, said target being axially aligned with said opening and having an area, at the side toward said opening, no greater than the cross-sectional area of the opening.

4,461,309

IONYL-ALKYL AND IONYL ALKENYL ETHERS AS FLAVORANTS FOR TOBACCO

Roman Kaiser, Uster, and Dietmar Lamparsky, Wangen-Dübendorf, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

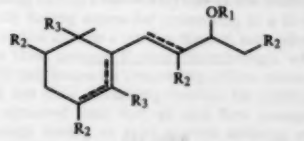
Continuation of Ser. No. 070,200, Aug. 27, 1979, abandoned, which is a division of Ser. No. 915,839, Jun. 15, 1978. This application Jan. 30, 1981, Ser. No. 229,907

Claims priority, application Luxembourg, Jun. 27, 1977, 77627; Switzerland, Apr. 26, 1978, 4499/78

Int. Cl.³ A24B *3/12, 15/30*

U.S. Cl. 131—276 **5 Claims**

1. A tobacco to which there has been added an effective amount of a compound, in a range of from one part per million to one thousand parts per million, of the general formula



(I)

wherein R_1 represents a C_{1-4}-alkyl or C_{2-4}-alkenyl group, R_2 represents a hydrogen atom or the methyl group, R_3 represents the methyl or ethyl group, the broken line in the side chain represents an optional bond and one of the broken lines in the ring represents an additional bond.

4,461,310

PROCESS FOR IMPROVING THE FILLING CAPACITY OF TOBACCOS

Klaus-Dieter Ziehn, Pinneberg, Fed. Rep. of Germany, assignor to H.F. & Ph.F. Reemtsma GmbH & Co., Hamburg, Fed. Rep. of Germany

Filed May 14, 1982, Ser. No. 378,390

Claims priority, application Fed. Rep. of Germany, May 15, 1981, 3119330

Int. Cl.³ A24B *3/18*

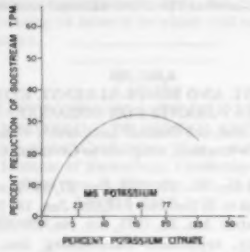
U.S. Cl. 131—296 **9 Claims**

1. A process for improving the filling capacity of tobaccos by treating the tobacco with a gas under pressure and subsequent heating after relief of the pressure, said process comprising treating the tobacco with nitrogen, argon or a mixture of nitrogen and argon at working pressures of 50 to 1000 bar and at an operating temperature in the range of 0° to 50° C. followed, after pressure relief, by a brief thermal aftertreatment, said tobacco to be treated with nitrogen, argon, or a mixture of nitrogen and argon having a moisture content of up to approximately 15% and the thermal aftertreatment being performed with steam having a moisture content of 0.5 to 10 Kg/m^3 or with saturated steam, said steam releasing large quantities of energy by condensation so that the volume is increased suddenly and is accompanied by simultaneous thorough moistening of the tobacco and there is a resulting increase in the cell wall elasticity.

4,461,311
METHOD AND SMOKING ARTICLE WRAPPER FOR REDUCING SIDESTREAM SMOKE

John H. Mathews; Mary L. DeLucia, both of Lee, and Charles F. Mattina, Lenox, all of Mass., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 24, 1981, Ser. No. 334,120
Int. Cl.³ A24D 1/02
U.S. Cl. 131—365 20 Claims



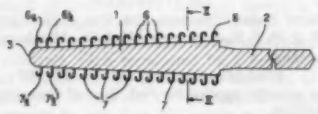
1. In a material adapted for use as a wrapper for smoking articles comprising a cellulosic base web containing about 10% to about 50% by weight of an inorganic filler,

the improvement wherein said material contains an alkali metal salt equivalent to at least about 23 milligrams of alkali metal per gram of base web.

4,461,312
EYELASH BRUSH AND METHOD AND APPARATUS FOR MANUFACTURING SAME

Jean-Louis H. Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Apr. 29, 1982, Ser. No. 373,172
Claims priority, application France, May 18, 1981, 81 09851
Int. Cl.³ A45D 2/12
U.S. Cl. 132—88.7 1 Claim

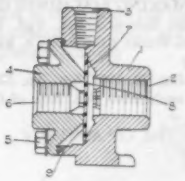


1. A mascara brush for brushing eyelashes with mascara comprising a support means and a plurality of individual bristles fixed to and extending outwardly from said support means, said bristles being integrally injection molded with said support means and being distributed along regular circular sets forming between them free annular-shaped passages to receive an eyelash so as to obtain a separation of the individual eyelashes to be brushed by means of said bristles, said bristles being disposed on said support means in rows regularly distributed around said support means with at least some of said rows having ends which are bent toward one end of said support means in the form of hooks and with the bristles of at least another row having ends bent in the form of hooks towards the opposite end of said support means, the bristles of adjacent rows being offset with respect to each other along said support means so that said hooks thereof are aligned to define a passage.

4,461,313
FLUID PRESSURE VALVE

Paul Beaumont, Nancyglow, Wales, assignor to Girling Midland-Ross Air Actuation Limited, Birmingham, England

Filed Apr. 2, 1982, Ser. No. 364,971
Claims priority, application United Kingdom, Apr. 6, 1981, 8110740
Int. Cl.³ F16K 7/17
U.S. Cl. 137—102 11 Claims

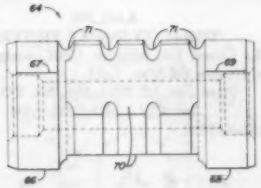


1. In a quick release valve comprised of: a valve body; an inlet port in said body; an exhaust port in said body; at least one outlet port in said body for connection to a working pressure line; at least one passageway in said body communicating said inlet port to each outlet port and each outlet port to said exhaust port; a freely floating flexible diaphragm in said valve body having a central portion seating against a port of said exhaust port to prevent flow of fluid from said inlet port therethrough when fluid under pressure is applied through said inlet port, and an outer portion extending into the passageway in said valve body so that when said fluid pressure from said inlet port is reduced below the fluid pressure in said outlet port, the fluid pressure from the outlet port lifts said central portion off of the seating portion of said exhaust port to allow the flow of fluid from the outlet port through the exhaust port; the improvement comprising at least one indent in said outer portion having a shape to form a cut-out peripheral section in said outer portion so that noise produced by vibration of said diaphragm during exhausting of fluid from each outlet port through said exhaust port is minimized.

4,461,314
ELECTROHYDRAULIC VALVE

Kenneth D. Kramer, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Sep. 13, 1982, Ser. No. 416,836
Int. Cl.³ G05D 7/06; F15B 13/044
U.S. Cl. 137—106 4 Claims



1. A valve assembly for controlling fluid communication between a pump, a reservoir and a double-acting fluid motor, the valve assembly comprising:

a housing having a valve bore therein, a pair of pump inlets each communicating with a portion of the valve bore, a pair of fluid motor outlets communicating with the valve bore, and a reservoir port communicating with the valve bore;

a pair of inlet valves for controlling fluid communication to the valve bore via corresponding ones of the pump inlets;

a pair of load check valves in the valve bore for permitting one-way fluid flow from each inlet through a portion of

the valve bore to a corresponding one of the fluid motor outlets, each load check valve being individually adjustable to vary its restriction to return fluid flow, each load check valve comprising a hollow cylindrical plug threadably mounted in the housing at an end of the valve bore, the plug having an annular valve seat on an inner end thereof, a check ball received by the plug and sealingly engageable with the valve seat, a hollow guide member mounted in the plug, and a resilient member received by the guide member and engaging the check ball, the resilient member being biased to urge the check ball towards the valve seat;

resilient means for biasing the load check valves to a closed position; and

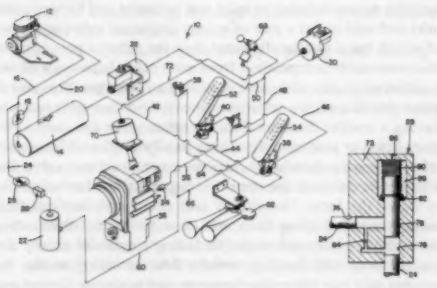
pilot-operated return valve positioned in the valve bore between the load check valves, the return valve including means for controlling return fluid flow from one of the load check valves to the reservoir port, the return valve having a pair of pressure-responsive valve members, each movable to engage and open one of the load check valves to return fluid flow from one fluid motor outlet when supply fluid is flowing through the other load check valve to the other fluid motor outlet.

4,461,315

PRESSURE PROTECTION SYSTEM

Dean W. May, Terre Haute, Ind., assignor to J. I. Case Company, Racine, Wis.

Filed Dec. 15, 1982, Ser. No. 449,885
Int. Cl.³ F16K *17/00*
U.S. Cl. 137—255 **3 Claims**



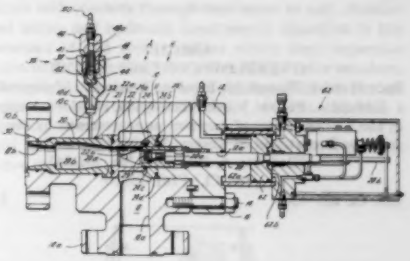
1. A pressure protection system for protecting a main fluid circuit from an auxiliary fluid circuit should a leak develop in the auxiliary fluid circuit, said pressure protection system including fluid compression means having a discharge for directing fluid under pressure to a main reservoir and to an auxiliary reservoir, said main reservoir connected to a first set of fluid operated components for forming said main fluid circuit and said auxiliary reservoir connected to a second set of fluid operated components for forming said auxiliary fluid circuit, valve means connected between the discharge of said fluid compression means and said main reservoir and the fluid pressure in said main reservoir being transmitted by a governor feedback line to said fluid compression means, pressure protection valve means connected between the discharge of said fluid compression means and said auxiliary reservoir, said pressure protection valve means including a valve body having a supply passage connected to the discharge of said fluid compression means and a delivery passage connected to said auxiliary reservoir, the longitudinal axis of said supply passage being substantially perpendicular to the longitudinal axis of said delivery passage, a spring biased plunger member movable within said delivery passage for closing said supply passage when the fluid pressure in the delivery passage drops below a predetermined level, and a bypass orifice connecting said supply passage and said delivery passage permitting a small amount of fluid to flow from said supply passage to said delivery passage when said supply passage is closed.

4,461,316

DRILLING CHOKE

Harry R. Cove, Edmonton, Canada, and John D. Muchow, Carson, Calif., assignors to Hydril Company, Los Angeles, Calif.

Filed Sep. 2, 1982, Ser. No. 414,418
Int. Cl.³ F16K *1/34, 37/00*
U.S. Cl. 137—312 **4 Claims**



1. A fluid flow control valve adapted for use in severe operating conditions encountered during earth drilling operations including:

a valve housing having a valve body and a valve bonnet, said valve body having means for connecting in a flow containing conduit to form a portion thereof, said valve body having a flow passage formed therethrough which is secured by said means for connecting in flow communication with the flow containing conduit for enabling the flow of contained fluid through said flow passage, said flow passage having an inlet portion defining an inlet longitudinal axis and an outlet portion defining an outlet longitudinal axis;

said valve bonnet releasably secured to said valve body and having an opening formed therethrough to provide clearance for a valve stem means to extend from said flow closure element exteriorly of said valve housing;

tubular seat means having a central opening, said seat means disposed in said flow passage for forming a sealable flow port through which fluid flow through said flow passage is directed, said flow port arranged in said tubular seat means for directing the flow of throttled fluid radially inwardly into said central opening of said tubular seat means when flowing through said flow passage;

a flow closure element disposed in said flow passage for operating movement to and from a first position sealing with said seat means for blocking flow of fluid through said flow port and a second position for enabling flow of fluid through said flow port;

an erosion control nozzle disposed in said flow passage adjacent said tubular seat means, said erosion control nozzle protecting said valve housing from the damaging effects of the throttled flow of flow from said central opening of said tubular seat means, said tubular seat means and erosion control nozzle disposed in said outlet portion;

means sealing said erosion control nozzle with said valve housing at spaced locations to isolate said housing from contact with the throttled fluid flowing through said flow passage;

indicator means communicating with said flow passage isolated by said means for sealing between said erosion control nozzle and said valve housing at spaced locations for signaling fluid leakage adjacent said erosion control nozzle;

valve stem means operably mounted with said housing and operably connected with said flow closure element for moving said flow closure element to and from the first and

second positions for controlling flow of fluid through said flow passage, said valve stem means includes a rod extending through said opening in said bonnet and sealed with said bonnet to block leakage of fluid therebetween; and actuator means mounted with said housing for operating said valve stem means to move said flow closure element to and from the first and second position in response to command signals transmitted to said actuator means wherein said actuator means controls the position of said flow closure element to control the flow of fluid through said flow port.

4,461,317

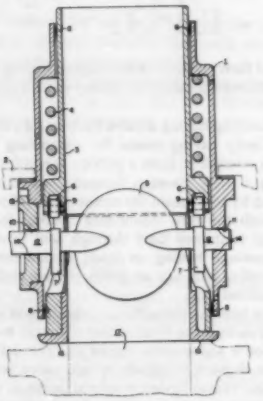
OVERFLOW CONTROL VALVE

Rolv Hundal, Hempfield; Boyd A. Kessinger, Murrysville, and Edward A. Parlak, North Huntingdon, all of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 6, 1981, Ser. No. 251,647

Int. Cl.³ F16L *29/00*

U.S. Cl. 137—565 **1 Claim**



1. In combination with a pump for use with liquid metal, said pump comprising a tank member which encloses the pump components, a pressure compartment within said tank member which encloses the pump impeller, an inlet liquid metal pipe sealed through said tank member and feeding into a bottom portion of said pressure compartment, an outlet liquid metal pipe sealed through a lower portion of said tank member and feeding from said pressure compartment, a liquid metal overflow reservoir in said tank member above said pressure compartment, an overflow pipe sealed through said tank member and connecting said overflow compartment to said inlet pipe exteriorly of said pump, an overflow valve means connecting said overflow compartment to said inlet pipe, and the top portion of said pump being removable from said tank member to repair and replace the internal pump components, the improved overflow valve means comprising:

(A) a valve body containing a movable valve disc;

(B) a spring-loaded valve cylinder within said valve body and movable with respect thereto,

(C) a valve seating surface fixed to the valve cylinder,

(D) means for controllably positioning said valve cylinder bringing said valve seating surface into and out of spring-loaded sealing contact with a seal surface and wherein said means for controllably positioning said valve cylinder is a rotating shaft which shaft moreover controls the position of said valve disc.

4,461,318

DOUBLE SEAT VALVE

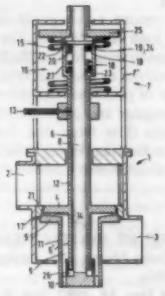
Wolfgang Brökelmann, Unna-Lünern, Fed. Rep. of Germany, assignor to Holstein und Kappert GmbH, Dortmund, Fed. Rep. of Germany

Filed Feb. 22, 1982, Ser. No. 351,139

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1981, 3106514; Feb. 21, 1981, 3106578

Int. Cl.³ F16K *1/44*

U.S. Cl. 137—614.19 **13 Claims**



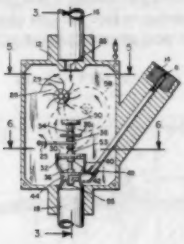
1. A double seat valve with leak control means comprising housing means forming an inlet and an outlet and between said inlet and said outlet a pair of axially displaced valve seats, one of which has a smaller diameter than the other; a pair of valve discs moveable independent from each other between a closed position engaging said valve seats and an open position, one of said valve discs being coordinated with said one valve seat and having a smaller diameter than the other valve disc, said valve discs being in said closed position axially displaced from each other to form a chamber therebetween and said one valve disc when moved to said open position engages the other valve disc to move the latter likewise to said open position; leak fluid passage means leading from said chamber to the surrounding air; main displacement means including a cylinder axially displaced from said housing means; first actuating means for moving said one valve disc between said positions thereof and including a tubular displacement rod connected to said one valve disc and projecting into said main displacement means, a piston connected to an upper portion of said tubular displacement rod and guided in said cylinder, so that the structural height of said main displacement means is reduced and thereby reduces the overall height of the double seat valve; and spring means cooperating with said piston for biasing said one valve disc to said closed position; and second actuating means for moving the other valve disc between the positions thereof and including a second actuating rod projecting from said other valve disc through said tubular displacement rod likewise into said cylinder of said main displacement means and through an open end in said piston beyond the latter; compression spring means in the region of said main displacement means; a pair of axially displaced abutment means respectively provided on said tubular displacement rod and said second displacement rod, said compression spring means having opposite ends respectively abutting against said pair of abutment means; and stroke assuring means for preventing seizing of said other valve disc in the open position and arranged in the region of said abutment means, so that by arranging said abutment means and stroke assuring means in the same region there is a considerable reduction in overall height of the double seat valve while assuring the necessary dimensions for securing the stroke.

4,461,319

WATER MODULATOR

Robert L. Macosko, 9701 Nita Ave., Chatsworth, Calif. 91311

Filed Sep. 26, 1977, Ser. No. 836,668
The portion of the term of this patent subsequent to Mar. 24, 1997, has been disclaimed.
Int. Cl.³ B05B 1/08
U.S. Cl. 137—624.12 19 Claims



1. In a water modulator, operable from a primary supply of water under pressure, to be used with irrigation and sprinkler systems that operate cyclically to periodically vary the flow of water provided to the supply heads of said system so as to gradually decrease said flow of water from a maximum flow rate to a minimum flow rate and contra, the combination comprising:

means for receiving water from said primary supply under pressure;

means for transforming the supply pressure of said received water into rotational motion;

means for cyclically, periodically opening and closing a rotary valve;

means introducing said received water into said periodically opening and closing rotary valve to create a slowly varying water effluent therefrom;

means for delivering said water effluent from said from said rotary valve to the supply heads of said system;

means for mixing other fluids with said varying water effluent; and

means for disabling said rotary valve so as to permit said water from said primary supply under pressure to proceed through said water modulator virtually unimpeded.

4,461,320

MANUALLY OPERABLE HYDRAULIC CONTROL DEVICE WITH HYDRAULIC POSITION RETENTION

Rino O. Barbagli, Borgaretto, Italy, assignor to Fiat Allis Europe S.p.A., Lecce, Italy

Filed Apr. 26, 1982, Ser. No. 371,551
Claims priority, application Italy, Jul. 9, 1981, 67956 A/81
Int. Cl.³ F15B 13/042
U.S. Cl. 137—625.6 8 Claims

1. In a hydraulic liquid directional control valve including a hydraulic liquid directional flow orienting device including a directional central flow member movably mounted in same for movement from a central neutral position to operative flow orienting positions one on either side of the central position, a first conduit connected to said device for supplying hydraulic liquid under pressure to same to move said member to one of said positions, a second conduit connected to said device for supplying hydraulic liquid under pressure to same to move said member to the other of said positions, and a source of hydraulic liquid under pressure for said conduits,

a hydraulic liquid directional control device for controlling the hydraulic liquid supplied to said conduits for selectively positioning said directional flow control member relative to said positions and comprising:

a housing body defining a chamber connected to tank and a pair of spaced parallel bores in side-by-side relation opening at like ends into said chamber,

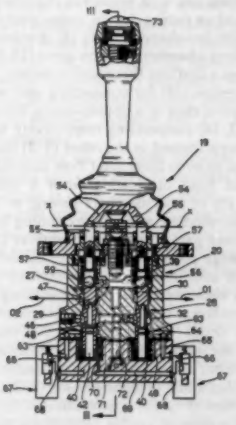
a slide valve member slidably mounted in each of said bores, with said slide valve members each having like ends of same adjacent said like ends of said bores respectively,

one of said conduits being connected to one of said bores adjacent said like end thereof and the other of said conduits being connected to the other of said bores adjacent said like end thereof,

said source of hydraulic liquid under pressure being connected to said bores adjacent the other ends thereof,

said bores and slide valve members being formed to communicate said conduits through said bores to said chamber and isolate said hydraulic liquid source therefrom in like positions of said slide members within their respective bores to define the neutral position of said valve members,

a control lever disposed intermediate said slide valve members and articulated to said housing body to shift from a neutral position to operative positions to either side of its said neutral position in a plane that includes said slide valve members,



means for translating said shifting movement of said control lever to opposite and simultaneous movement of said slide valve members longitudinally of their respective bores,

said slide valve members and said bores adjacent their other ends being formed to, when said control lever has been shifted to either of said operative positions to move one of said slide valve members inwardly of its bore from its neutral position to its corresponding operative position, communicate said source of hydraulic liquid under pressure to the other end of the other slide valve member thereby moving a portion of said other slide valve member outwardly of its bore into pressure contact with said control lever for hydraulically locking said control lever in the selective operative position,

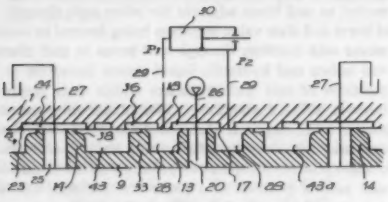
said slide valve members and said bores further being formed to when said slide valve members are in their said operative positions, communicate the hydraulic pressure liquid source connection that is adjacent the other end of the bore, of the slide valve member that is thereby disposed in its said operative position, to the conduit connection that is adjacent said like end of such bore,

and means for releasing said hydraulic locking of said control lever.

4,461,321
ROTARY HYDRAULIC DISTRIBUTOR FOR HYDRAULIC POWER-DRIVE SYSTEMS

Juan S. Bacardit, Barcelona, Spain, assignor to Bendiberica S.A., Barcelona, Spain

Filed May 25, 1982, Ser. No. 382,004
Claims priority, application Spain, May 26, 1981, 502483
Int. Cl.³ F16K *11/02*; F15B *13/04*
U.S. Cl. 137—625.21 **6 Claims**



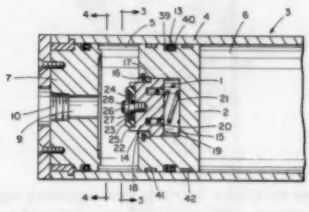
6. A rotary hydraulic distributor for a hydraulic power-drive system, comprising two members (**1–3, 9**) capable of relative rotation one with respect to the other and connectable to an input and an output device, respectively, and which form a substantially disc-shaped cavity (**8**) divided into at least one pair of working chambers (**28**) by arms (**13,14**) which radially protrude from a first one (**9**) of said members, further including connection means (**29**) for connecting said working chambers to the respective ends of a double-acting driving cylinder (**30**), said arms (**13, 14**) cooperating respectively with inlet (**18**) and outlet (**24**) ports formed in the other (**1–3**) member and having closing edges so as to form fluid flow control valve means for a pressurized fluid originating from a pressure generating source, one (**9**) of said members having at least one radially extending intermediate arm (**33**) extending into each working chamber of said pair of working chambers (**28**) and cooperating with passage ports (**36**) formed in the other member (**1–3**) so as to form additional fluid flow control valve means, said valve means associated with said arms being selectively operated in accordance with the relative rotation between said members in order to control selected successive portions (**1–2–3–4**) of the input driving torque/outlet operating pressure characteristic curve for said rotary hydraulic distributor, characterized in that a first O-slope portion (**1–2**) of the characteristic cuve is effected by the combination of an intermediate arm (**33*a***) having a stepped profile including a straight tread (**41*a***) converging with a straight internal riser (**42*a***) oriented toward the arm (**14**) that cooperates with said outlet port (**24**) and a stepped-shaped closing edge (**38**) of the cooperating arm (**14**), the closing edge (**38**) disposed toward the adjacent intermediate arm (**33**).

4,461,322
ACCUMULATOR WITH PISTON-POPPET SEAL ASSEMBLY

Carl R. Mills, Rte. 1, Box 353, East Dundee, Ill. 60118

Filed May 6, 1983, Ser. No. 492,203
Int. Cl.³ F16L *55/04*
U.S. Cl. 138—31 **3 Claims**

1. In an accumulator having a piston reciprocating within the bore of a cylinder to subdivide the bore into a hydraulic chamber and a gas chamber of variable volumes, the piston having a first face common to the hydraulic chamber and a second face common to the gas chamber, first means closing one end of the cylinder bore and formed with a hydraulic passage terminating in an opening to the chamber whose immediate periphery defines a poppet seat, the first cylinder-bore closing means together with the first piston face and the cylinder defining the hydraulic chamber, and second means closing the other end of the cylinder bore and formed with a gas passage communicating with the gas chamber, the improvement for substantially equalizing the gas and hydraulic pressures on a piston enveloping seal in response to a momentary relatively large pressure differential between the hydraulic and gas chamber pressures by which a greater gas pressure drives the piston toward the first closing means, comprising a socket-like recess formed in the piston having a closed bottom and sidewalls with the only recess opening being opposite the bottom and which opening appears at the first piston face, a floating piston-poppet seal assembly partially disposed within the socket-like recess and having a seal portion extending into the hydraulic chamber to face the first closing means and with the piston-poppet seal assembly being substantially removed

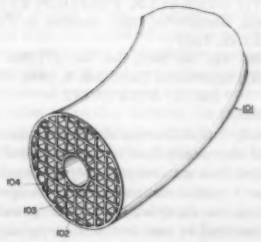


from contact with the cylinder, spring means operating between the piston and the piston-poppet seal assembly continuously exerting a force tending to force the piston-poppet seal assembly away from the piston, and means supporting the piston-poppet seal assembly on the piston enabling the piston-poppet seal assembly to reciprocate relative the piston to seal the hydraulic passage by seating on the poppet seat and trap thusly a volume of pressurized hydraulic liquid within the hydraulic chamber in response to a pressure differential which drives the piston-poppet seal assembly into contact with the poppet seat thus substantially equalizing the gas pressures on both sides of the piston enveloping seal.

4,461,323
BENT HONEYCOMB PIPE ASSEMBLY WITH CENTRAL PIPE

Akira Morikawa, and Yoshinori Narita, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Continuation-in-part of Ser. No. 826,089, Aug. 19, 1977, abandoned. This application Feb. 6, 1979, Ser. No. 9,903
Int. Cl.³ F16L *9/18*
U.S. Cl. 138—115 **9 Claims**



1. A bent honeycomb pipe assembly with a central pipe and being of unitary construction, said pipe comprising an outer pipe section bent at a substantial predetermined curvature, a bent central pipe section provided coaxially with the outer pipe section; and a bent honeycomb-shaped pipe section interposed between the outer and central pipe sections coaxially therewith, the outer, central and honeycomb-shaped pipe sections each having an equal wall thickness over the total length, said outer, central and honeycomb-shaped pipe sections

being simultaneously coextruded to form a single integral piece.

4,461,324

RUBBER HOSE

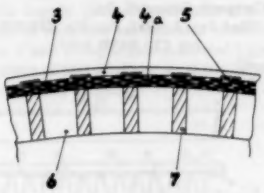
Kurt Schneider, Hamburg, Fed. Rep. of Germany, assignor to Eddelbüttel & Schneider, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 18,670, Mar. 8, 1979, abandoned, which is a continuation of Ser. No. 840,222, Oct. 7, 1977, abandoned. This application Mar. 16, 1982, Ser. No. 358,691

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1976, 7631503[U]

Int. Cl.³ F16L *9/00*

U.S. Cl. 138—174 **1 Claim**



1. A hose wall specifically utilized only in dredging hoses wherein abrasive solid materials in wet condition particularly with sharp edges are conveyed in large volume internally both by pressure and also by suction through the hoses and thereby the interior surfaces of the hoses are subjected to slashing and wear due to the sharp edges, the hose wall comprising in combination:

an outer layer of wear-resistant elastomeric material, said outer layer having an inner surface;

a reinforcing intermediate layer abutting the inner surface of the outer layer, the intermediate layer having reinforcement means embedded therein;

an inner layer of wear-resistant elastomeric material abutting the intermediate reinforcing layer and sandwiching the intermediate reinforcing layer between the inner and outer layers, said inner layer having an exposed surface facing the interior of the hose as protection against wear;

metallic rings having a rectangular cross-section are embedded in the elastomeric inner layer; said rings engaging against said intermediate reinforcing layer and extending continuously between the intermediate reinforcing layer and the exposed surface of the inner layer, said rings being spaced axially of said hose with the elastomeric material of said inner layer therebetween and having metallic exposed surfaces also facing the interior of the hose when the hose wall is viewed in longitudinal cross-section, whereby the exposed surfaces of said rings protect the inner surface of the hose wall as the sharp-edge material moves longitudinally through the hose defined by the wall while allowing the hose to flex as the elastomeric material of the inner layer is compressed or tensioned between said rings and, additional reinforcing means radially aligned with said metal rings and positioned between the outer layer and said reinforcing intermediate layer to provide additional support for the embedded metallic insert means, the axial space longitudinally between said rings is completely filled with the wear-resistant elastomeric material so large in configuration that flexibility of the hose is unimpaired while overall strength of the hose is enhanced by said additional reinforcing means which prevents the layers of the hose from separation from the metallic ring containing inner layer.

4,461,325

ELECTROMAGNETIC DEVICE FOR CONTROLLING DOBBIES AND OTHER WEAVING SYSTEMS

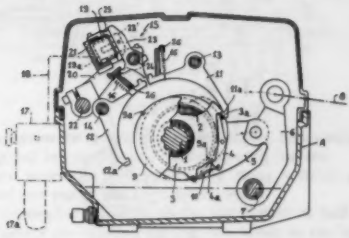
Joseph Palau, Duingt, and Jean-Paul Froment, Doussard, both of France, assignors to S.A. des Etablissements Staubli, Faverges, France

Filed Aug. 12, 1982, Ser. No. 407,513

Claims priority, application France, Nov. 5, 1981, 81 21106

Int. Cl.³ D03C *1/00*

U.S. Cl. 139—68 **5 Claims**



1. An electromagnetic control device for controlling each pair of actuating hooks of the weaving system of a loom including heddles and including a pattern reading device operative in cycle with the loom to deliver electrical output signals to the control device, and the weaving system including a force amplifier system cooperatively associated with each pair of actuating hooks and including drawing means connected between the force amplifier systems and the heddles, said control device comprising:

(a) a chassis supported on the loom adjacent to the force amplifier systems and operative to oscillate between two opposed positions in cycle with the loom;

(b) an electromagnet corresponding with each pair of actuating hooks and each electromagnet being coupled to receive output signals from the pattern reading device, the electromagnets being mounted on the chassis to oscillate therewith and each electromagnet being located opposite an associated pair of actuating hooks; and

(c) a selector member corresponding with each electromagnet and associated pair of actuating hooks, the selector members being pivotally mounted on the chassis and oscillating therewith, and each selector member being pivotable between an engaged position in which it is held against its electromagnet when energized and a released position wherein it is pivoted away from its electromagnet when de-energized, and each selector member having engaging means operative in some of said opposed positions of the chassis and in some pivotal positions of the selector means to selectively engage and displace one or the other of the hooks of the associated pair.

4,461,326

WARP STOP MOTION DEVICE OF A WEAVING MACHINE

Hans Baumann, Horgen, Switzerland, assignor to Grob & Co. Aktiengesellschaft, Horgen, Switzerland

Filed Sep. 29, 1982, Ser. No. 426,660

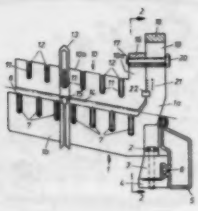
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1981, 3149235

Int. Cl.³ D03D *51/28*

U.S. Cl. 139—369 **5 Claims**

1. In a weaving machine having a warp stop motion device which includes a plurality of spaced apart and parallel related contact bars and a plurality of spaced apart and parallel related guide bars disposed below said contact bars, an upper support assembly comprising a plurality of spaced apart and parallel upper supports for said contact bars lying perpendicular thereto, a lower support assembly comprising a plurality of

spaced apart and parallel lower supports for said guide bars lying perpendicular thereto, a warp end supporting beam lying parallel to said bars, said assemblies being adjustable vertically to a spaced apart predetermined distance, said lower support assembly being cantilevered at one end thereof to said beam so that the opposite end of said lower support assembly is free and unsupported, said upper support assembly being cantilevered at one end thereof to said one end of said lower support assembly so that the opposite end of said upper support assembly is free and unsupported, upwardly open slots at the upper edges of said lower supports for the reception of said guide bars, and



means for adjusting the vertical spacing between said support assemblies, the improvement wherein the upper and lower confronting edges respectively, of said lower and upper assemblies extend to said opposite end of said respective assemblies thereof to thereby define a uniform spacing between said assemblies which is open at said opposite end of each said assembly, whereby said guide bars may be inserted into said slots between said assemblies and from said free ends thereof, said adjusting means including means for locking said assemblies after adjustment, and said lower support assembly being detachably mounted to said beam.

4,461,327

PROCESS AND ARRANGEMENTS FOR CHARGING A TUBULAR REACTOR WITH GRANULAR SOLIDS

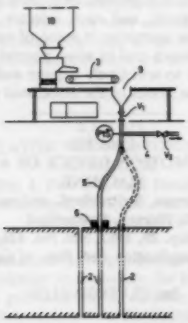
Rudolf Magin, Schifferstadt; Franz Nenninger, Heidelberg, and Gerd-Juergen Engert, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 28, 1981, Ser. No. 267,869

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1980, 3020845

Int. Cl.³ B65B *1/04*

U.S. Cl. 141—1 **6 Claims**



1. A process for charging a plurality of tubes in a tube reactor with granular catalysts, which, for this purpose, are fed from at least one stock vessel to a controllable metering device and from there, via guiding and directing devices and flexible hose connections, successively into the tubes to be filled, wherein, during the packing of the tubes (2), a stream of gas of constant amount is generated, which can, after an individual tube has been packed, be passed temporarily, via one or more controllable valves, through this packed tube, a pressure drop measurement being carried out at the same time and the differential between the measured value and the predetermined intended value being used to determine a small additional amount of packing material which is subsequently introduced into the tube which has been subjected to measurement, and wherein thereafter a program control triggers the mechanical packing of the next tube, metered in the same manner, with subsequent pressure drop measurement and metering of the additional amount.

4,461,328

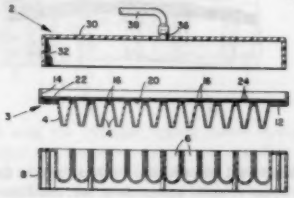
PIPETTE DEVICE

James W. Kenney, West Chester, Pa., assignor to Drummond Scientific Company, Broomall, Pa.

Filed Jun. 4, 1982, Ser. No. 385,018

Int. Cl.³ B65B *3/14*

U.S. Cl. 141—67 **13 Claims**



7. A multiple pipette device comprising:

a plurality of pipette tubes having upper and lower ends,

means for holding the pipette tubes together,

a hydrophobic filter secured to the top of each pipette tube to limit the upward movement of an aqueous liquid in the tube to provide for filling the tube with a predetermined amount of aqueous liquid while permitting the passage of a gas through the filter, and

means forming a manifold above said pipette tubes and in fluid communication with said tubes, said manifold being adapted to be connected to a source of vacuum and a source of pressure.

4,461,329

ARRANGEMENT FOR CENTERING CONTAINERS IN BOTTLE TREATMENT MACHINES

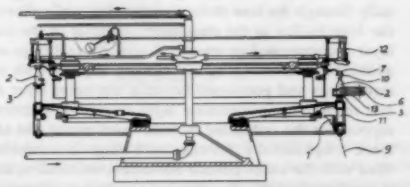
Uwe Knabe, Holzwickede, and Dieter Unger, Waltrop, both of Fed. Rep. of Germany, assignors to Holstein und Kappert GmbH, Dortmund, Fed. Rep. of Germany

Filed Jan. 25, 1982, Ser. No. 342,166

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1981, 3102920

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—150 **6 Claims**



1. In a bottle treatment machine, particularly in a bottle-filling machine having filling valves rotatable along a predetermined filling path, an inlet star engaging the bottles and mov-

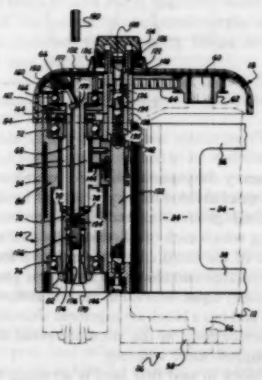
able in a bottle supply plane along an inlet star path which contacts said filling path in a contact point and so as to move the bottles in a bottle movement plane, and an outlet star, the improvement comprising: an arrangement for centering containers including centering elements arranged to be located below the filling valves and movable in a vertical direction; bottle lifting organs having a receiving plane and movable below said centering elements in the vertical direction; and a curved guiding element arranged to guide said bottle lifting organs in its movement along said guiding element in the region of said inlet and outlet stars below the bottle movement plane so that said bottle lifting organs are lowered in an outlet region and thereafter after taking over a bottle and passing an inlet region are again raised, said guiding element being formed so that said receiving plane of said lifting organs prior to said contact point of said filling path and said inlet star path as considered in a supplying direction of the bottles coincides with said bottle supply plane of said inlet star, and during further rotation in direction toward said contact point said receiving plane of said lifting organs is located higher than said bottle supply plane of said inlet star so that it is not necessary to lower said centering elements.

4,461,330

PORTABLE WOODWORKING POWER TOOL

Donald J. Judkins, 537 Barcelona Dr., Millbrae, Calif. 94030

Filed Aug. 6, 1982, Ser. No. 405,663
Int. Cl.³ B27C *5/10*
U.S. Cl. 144—134 D **26 Claims**



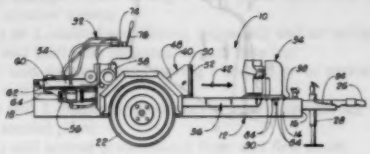
1. A power tool comprising: a support; a spindle; first means mounting the spindle on the support for angular movement relative thereto through a predetermined arc into any one of a number of operative positions; means coupled with said spindle mounting means for releasably securing the spindle in any one of said operative positions; second means coupled with the spindle for mounting the same for axial movement relative to the support; a drive shaft rotatably coupled to said spindle; means adjacent to one end of the drive shaft for releasably attaching a tool thereto; a motor carried by the support, said motor having a drive shaft; and means interconnecting the motor drive shaft with the shaft of the spindle for rotating the spindle shaft when the spindle is in any one of said operative positions; and means coupled with the motor for controlling the actuation thereof.

4,461,331

APPARATUS FOR SPLITTING LOGS

Forrest H. Mertz, Ponca City, Okla., assignor to Mertz, Inc., Ponca City, Okla.

Filed Sep. 13, 1982, Ser. No. 417,145
Int. Cl.³ B27I *7/00*
U.S. Cl. 144—193 A **7 Claims**



1. an apparatus for splitting a log into billets, comprising:
an elongated log support for receiving a log thereon;
log drive means for driving the log along a drive path toward one end of the log support; and
a splitter assembly mounted on the log support at said one end thereof for splitting the log into billets as the log is driven into the splitter assembly by the log drive means, the splitter assembly comprising:
a splitter head mount secured to the log support to extend into said drive path; and
a splitter head pivotally supported on the splitter head mount between the splitter head mount and the log drive means for pivotal movement on the splitter head mount about an axis extending along said drive path, the splitter head having a splitter edge formed on one side thereof facing away from said one end of the log support and the splitter head comprising:
a first splitter section extending laterally of the pivot axis of the splitter head on the splitter head mount and having a portion of the splitter edge formed thereon; and
a second splitter section extending laterally of the pivot axis of the splitter head on the splitter head mount and having a portion of the splitter edge formed thereon, the second splitter section extending from said pivot axis in a direction opposite the extension of the first splitter section from said pivot axis; and
said second splitter section has a greater lateral extent from said pivot axis than the lateral extent of the first splitter section from said pivot axis;
whereby when large diameter logs are to be split, the splitter head can be supported on said splitter mount so that said second section is above said first section, thereby increasing the vertical extent of the splitter head from said log support; and when small diameter logs are to be split said splitter head can be supported on said splitter mount so that said first section is above said second section.

4,461,332

COSMETIC BAG

Beverly S. Parkhurst, 260 E. Chestnut, Chicago, Ill. 60611

Filed Jul. 29, 1982, Ser. No. 403,010
Int. Cl.³ A45C *13/30*; A45D *33/00*
U.S. Cl. 150—34 **8 Claims**

1. A bag for cosmetic articles and the like, comprising, in combination, a top cover means, a bottom cover means attached to the top cover means, a hook and loop strap member extending across at least part of the interior of the bag, padding means within the bag and adjacent to the hook and loop member, and having a top surface extending, when the padding is uncompressed, above the top surface of the hook and loop strap member, means co-operating with the hook and loop strap member to retain the hook and loop strap member in a selected position within the bag and relative to the padding,

whereby a cosmetic article can be secured between the hook and loop member and the padding means and resiliently pulled

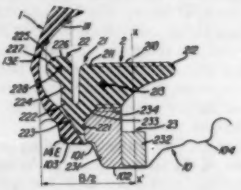
into and substantially engaged by the padding means, so as to retain the cosmetic article in a substantially immobile position within the cosmetic bag.

4,461,333

INTERNAL SUPPORT TO RESIST THE FLATTENING OF A TIRE

Jean-Claude Filliol, Cebazat; Bernard Ruby, Pont-du-Chateau, and Jean Senechal, Mozac, all of France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Nov. 3, 1982, Ser. No. 438,955
Claims priority, application France, Nov. 20, 1981, 81 21933
Int. Cl.³ B60C *17/00, 5/00, 23/06*
U.S. Cl. 152—158 **23 Claims**



1. A support arranged within the inflatable cavity of a tire comprising a crown having a tread extended on each side by a sidewall terminating in a bead mounted on a corresponding seat of a wheel rim for a vehicle, which support, when the tire is mounted and inflated to its normal pressure, comprises, on the one hand, an elastically deformable annular element for the radial support of the crown of the tire, the radially outward periphery of which radial support element extends axially at least between the equatorial plane of the tire and that sidewall of the tire arranged toward the outside of the vehicle over a width less than that of the inflatable cavity at the height of the radially outward periphery of the radial support element, and, on the other hand, an elastically deformable annular element for the axial holding of the sidewall at least between the radial support element and that sidewall of the tire arranged toward the outside of the vehicle, which axial holding element is connected to the radial support element and the radially outward periphery of which axial holding element has a developed length in the circumferential direction greater than the developed length in the circumferential direction of the radially outward periphery of the radial support element but less than the developed length in the circumferential direction of the radially facing portion of the inside of the tire, characterized by the fact that:

the support comprises a device for fastening the radial support element to the wheel rim,

the radial support element, which contacts the inside of the crown of the tire only when deflated or uninflated, has a radially inward lateral extension near the bead of that sidewall arranged toward the outside of the vehicle,

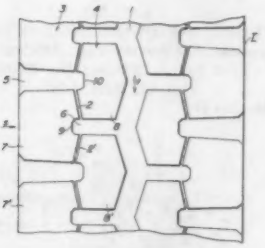
the axial holding element, which contacts the inside of the axially outer sidewall of the tire only when deflated or uninflated to provide transverse stiffness of the deflated or uninflated tire, is formed essentially of a flexible ring and of a terminal annular protuberance radially outward of the ring and integral with it, the ring being provided at its radially inner end with a connection to the lateral extension of the radial support element, and the terminal annular protuberance being staggered axially toward the corresponding sidewall of the tire with respect to the connection of the ring to the lateral extension of the radial support element so that its axially outer surface is at a distance from the equatorial plane of the tire greater than the half-width of the rim but less than the maximum axial half-width of the inside of the tire.

4,461,334

HEAVY DUTY PNEUMATIC TIRES

Hikaru Tansei, Higashimurayama; Katsuhiko Kajimoto, Kodaira, and Mikio Nomata, Tanashi, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Jul. 21, 1983, Ser. No. 515,735
Claims priority, application Japan, Jul. 21, 1982, 57-125859
Int. Cl.³ B60C *11/00*
U.S. Cl. 152—209 R **8 Claims**



1. In a heavy duty pneumatic tire having a tread pattern formed in a tread divided into a plurality of lands by a plurality of longitudinal grooves extending circumferentially of the tread, among which each of a first land located in at least a side edge region of the tread and a second land located adjacent thereto is separated into blocks by transverse grooves arranged at a substantially equal interval in the circumferential direction of the tread and has a block arrangement showing substantially the same surface form in the circumferential direction of the tread, the improvement wherein:

(a) each block in said first land is arranged in zigzag form opposite to two adjoining blocks separated by said transverse groove in said second land;

(b) opposed groove walls of said longitudinal groove located between said first and second lands extend in substantially parallel with each other in the circumferential direction of the tread and have a minimum distance corresponding to not more than 3% of the width of said tread so as to produce the contacting of each block in said first land with at least one of the two adjoining blocks in said second land only by the action of lateral force during the running of the tire under a load; and

(c) the remaining longitudinal groove(s) other than said longitudinal groove located between said first and second lands is located in a center of said tread or arranged so as to sandwich a central land of said tread and has a groove width corresponding to 4–10% of said tread width.

4,461,335

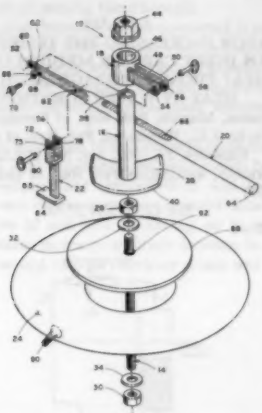
TIRE CHANGING HAND TOOL

Jerry L. Beemer, 2314 Eby Ave., Fort Wayne, Ind. 46804

Filed Aug. 16, 1982, Ser. No. 408,157

Int. Cl.[3] B60C *25/08*

U.S. Cl. 157—1.22 9 Claims



1. An apparatus suitable for mounting and dismounting a tubed or tubeless tire and rim, said apparatus adapted for securement to a suitable base, wherein the apparatus comprises:

(a) a center post adapted for securement to the base;

(b) a tubular bracket with a first aperature sized to receive a portion of the center post therethrough, said bracket having an inclined, rim engaging flange inclined away from said base when in use;

(c) a means to forcibly bias the rim engaging flange of the tubular bracket against the rim towards the base about said center post;

(d) a rotatable arm with a second aperature therethrough, said second aperature positioned to be in sliding alignment about a portion of said tubular bracket;

(e) an elongated handle with an axis end having an elongated flat thereon, with said handle pivotally attached near the axis end to said rotatable arm;

(f) an extended foot, removably, pivotally attached to said handle, said foot having a base positioned to engage the tire side in proximity to the rim circumference when used; and

(g) an inflatable member, partially secured to the base about the center post, said inflatable member having an inflation valve, and sized to bias the tire side away from the base as said inflation member is inflated with a pressure sufficient to seat the tire bead against the rim in preparation for tire inflation;

wherein the rotatable arm and extended foot may be unattached from said handle, and the narrow flat axis end of the handle interposed between the tire and the rim to remove the tire from the rim by rotatably biasing the handle against the tubular bracket.

4,461,336

SYSTEM FOR EMERGENCY INTERRUPTION OF CONTINUOUS CASTING OPERATIONS

Victor Remeika, 617-101 Kathleen St., Whitby, Ontario, Canada

Filed Aug. 26, 1981, Ser. No. 296,544

Int. Cl.[3] B22D *11/10, 11/16, 41/10*

U.S. Cl. 164—155 8 Claims

1. In a continuous casting apparatus comprising a tundish for discharging molten metal through an orifice into a remote mold having a mold cover, an apparatus for interrupting the flow of molten metal from the tundish, comprising:

(a) actuator means connected to said tundish;

(b) a chill plug insertable into said orifice for sealing said orifice for stopping flow of molten metal therethrough;

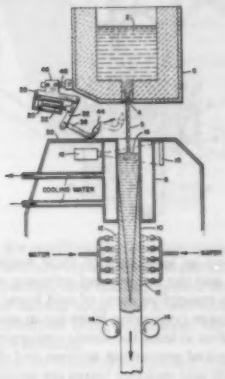
(c) linkage means having a first pivot connected to said actuator means;

(d) an L-shaped arm having a base leg and an upright leg, said chill plug mounted on said base leg;

(e) said linkage means having a second pivot remote from said chill plug;

(f) said L-shaped arm connected at said upright leg to said second pivot;

(g) said second pivot spaced from said first pivot;



(h) stop means on said linkage means positioned below said second pivot and adjacent thereto for limiting downward pivoting of said L-shaped arm and said chill plug;

(i) said second pivot being positioned between said first pivot and said stop means;

(j) said upright leg having a portion thereof engageable with said stop means between said second pivot and said base leg; and,

(k) when said actuator is operating, said L-shaped arm is caused to first move laterally and with unrestricted pivotal movement about said second pivot and subsequently to engage said stop means, thereby restricting pivotal movement of said L-shaped arm about said second pivot to cause said L-shaped arm and said linkage means to move unitarily about said first pivot and engage said chill plug in said orifice.

4,461,337

MOLDING INSTALLATION FOR THE PRODUCTION OF BIPARTITE BOXLESS FOUNDRY MOLDS

Günter Müller, Karlsruhe, Fed. Rep. of Germany, assignor to ARENCO-BMD Maschinenfabrik GmbH, Fed. Rep. of Germany

Filed Jun. 16, 1980, Ser. No. 159,478

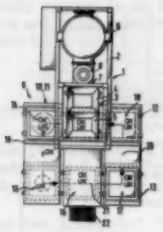
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1979, 2924114

Int. Cl.[3] B22C *17/00*

U.S. Cl. 164—181 6 Claims

1. Molding installation for the production of bipartite, boxless foundry molds, comprising a molding machine with a molding station wherein a cope and a drag are simultaneously shaped in molding boxes with a bilateral pattern arranged therebetween and thereafter are lifted off from the pattern in upward and downward directions, respectively, and a conveying means by which the molding boxes with the cope and the drag are conveyed separately along a closed path from the molding station to a joining and stripping station where the

mold boxes with the cope and drag are recombined, then are removed together from the complete foundry mold, and the empty molding boxes are returned to the molding station, while the boxless foundry mold is transferred to a casting line, wherein, between the molding station and the joining and stripping station, there is provided at least one processing station for conducting finishing work on at least one of the cope and drag, characterized in that said closed path along which the molding boxes are conveyed from the molding station is a rectangular one; in that the conveying means has upper conveying lanes for the copes and lower conveying means for the drags, said upper and lower conveying lanes having linear sections arranged in a parallel superimposed



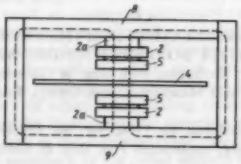
relationship along at least part of their lengths; in that the molding station and the joining and stripping station are separately located in respective areas of said linear sections where the upper and lower conveying lanes are in said superimposed relationship; in that at least the lower conveying lane includes a number of required processing stations and the length of the path along which said molding boxes are separately conveyed with the cope and drag is adapted to the respective processing stations included therein; and in that a portion of said lower conveying lane, between said molding station and said joining and stripping station, extends, at least in part, beyond said upper conveying lane so as not to be in said superimposed relationship with said upper conveying lane, said number of processing stations being located in said portion.

4,461,338

HORIZONTAL CONTINUOUS CASTING OF METALS

Yngve Sundberg, Västerås, Sweden, assignor to ASEA AB, Västerås, Sweden

Filed Nov. 16, 1981, Ser. No. 321,544
Claims priority, application Sweden, Dec. 22, 1980, 8009058
Int. Cl.³ B22D *27/02*
U.S. Cl. 164—466 **5 Claims**



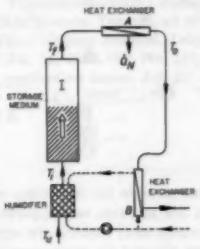
1. A horizontal continuous metal casting method comprising pouring a continuous stream of molten metal on a substantially horizontal, non-magnetic, flat support on which the stream flows substantially horizontally forwardly while gravitationally spreading unevenly laterally in a horizontal direction so as to form into a forwardly traveling gradually forming flat flow having at least one forwardly flowing portion that is thicker than the balance of the flow laterally on the sides of that portion; and directing a non-reversing DC magnetic field substantially perpendicularly through said portion and the non-magnetic support so as to cause an electrodynamic braking force to be exerted on said portion and cause it to spread laterally in the horizontal direction more rapidly than by said gravitational spreading alone and provide a smoothing-out effect on the flow so that the flow is made substantially flat and of uniform thickness.

4,461,339

METHOD FOR INCREASING THE TEMPERATURE OF GASEOUS INERT CARRIER MEDIUM ON TAKING USEFUL HEAT FROM A STORAGE MEDIUM STORING HEAT BY WATER SORPTION

Rudolf Sizmann, Munich, Fed. Rep. of Germany, assignor to Didier-Werke A.G., Wiesbaden, Fed. Rep. of Germany

Filed Jul. 27, 1982, Ser. No. 402,327
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1981, 3130671
Int. Cl.³ F28D *21/00*
U.S. Cl. 165—1 **7 Claims**



1. A method for increasing the temperature of a gaseous inert carrier medium, said method comprising:

passing a moist carrier medium through a storage medium storing heat by water sorption, and thereby drying and heating said carrier medium;

transferring residual heat from the thus dried and heated carrier medium to water after taking up the useful heat; and

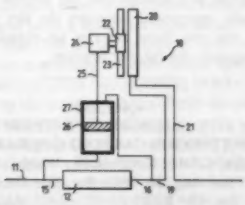
employing the thus heated water to humidify and increase the temperature of said moist carrier medium before the passage thereof through said storage medium.

4,461,340

OIL COOLER

Kenneth J. Hart, Pinner, and Colin P. Smith, Stalbans, both of England, assignors to Rolls-Royce Limited, London, England

Filed Mar. 16, 1983, Ser. No. 475,744
Claims priority, application United Kingdom, Mar. 31, 1982, 8209577
Int. Cl.³ F01P *7/02*
U.S. Cl. 165—39 **4 Claims**



1. An oil cooler comprising:

heat exchanger means for the passage of oil therethrough;

a driven fan positioned adjacent said heat exchanger means to direct a flow of cooling air onto said heat exchanger means for cooling any oil passing therethrough, said driven fan having variable pitch blades;

viscous restrictor means through which oil is passed, said viscous restrictor means having an inlet and an outlet and being capable of creating an oil pressure drop based on viscosity of oil passing therethrough;

oil pressure drop detection means connected in parallel with said inlet and said outlet of said viscous restrictor means, said oil pressure drop detection means including an output signal means for providing a signal proportional to oil pressure drop detected across said viscous restrictor means;

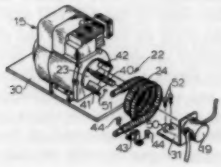
and means to vary pitch of said variable pitch blades of said driven fan, said last-mentioned pitch means being operatively connected and responsive to said output signal means of said oil pressure drop detector means whereby rate of flow of said flow of cooling air to said heat exchanger means increases with any decrease in oil pressure drop across said viscous restrictor means and vice versa.

4,461,341

COOLING SYSTEM FOR HYDRAULIC POWERED APPARATUS

Donald R. Morrison, 6228 Eagle Peak Dr., Charlotte, N.C. 28214

Filed Mar. 17, 1982, Ser. No. 359,027
Int. Cl.³ F28D *7/02*
U.S. Cl. 165—51 **2 Claims**



1. In a hydraulic powered apparatus, comprising:

(a) an internal combustion engine mounted on a base structure and having a drive shaft extending therefrom;

(b) a hydraulic fluid cooling assembly comprising:

(i) a blower assembly mounted immediately adjacent said engine, said assembly having a blower mounted on and integrally secured to said drive shaft, said blower being mounted concentric of said shaft and rotatable therewith so that the vanes of said blower create a stream of incoming and outwardly forced air; and

(ii) a multi-coiled finned tube heat exchanger, said heat exchanger being mounted adjacent said engine and surrounding said blower assembly and concentric with said drive shaft so as to allow cooling air from said blower to be directed across said finned tube heat dissipating means to cool heated hydraulic fluid passing therethrough; and

(c) a hydraulic pump mounted on said base structure adjacent said heat exchanger and concentric with said drive shaft of said engine and directly connected to the end of said shaft opposite said engine; and

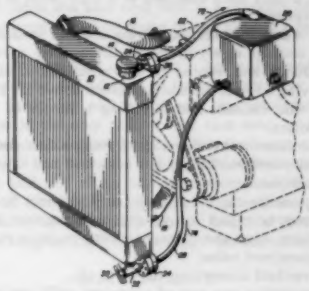
wherein said blower assembly, said fluid cooling assembly and said fluid pump are formed as a unified structure.

4,461,342

METHOD AND APPARATUS FOR AUTOMATICALLY REFILLING A LEAKING LIQUID COOLING SYSTEM AS AN ENGINE OPERATES BY UTILIZING A RADIATOR AND A REMOTE COOLANT RESERVOIR

Walter C. Avrea, 1405 Whalers Way, Tempe, Ariz. 85283

Filed Apr. 29, 1982, Ser. No. 372,915
Int. Cl.³ F01P *11/02;* **F28D** *15/00*
U.S. Cl. 165—104.32 **37 Claims**



1. Apparatus for modifying an existing engine liquid cooling system to automatically replace coolant discharged from a leak as the engine operates, said cooling system comprising:

a. a radiator having upper and lower surfaces and a horizontal centerline lying equidistant between the upper and lower surfaces;

b. first means for transferring coolant from the engine to said radiator;

c. second means for transferring coolant from said radiator to the engine;

d. a filler neck disposed at a high point on said radiator;

e. means for sealing said filler neck to the ambient atmosphere;

f. a coolant overflow fitting coupled to said filler neck;

g. a threaded receptacle coupled to a low point in said radiator;

h. a coolant reservoir physically spaced apart from said radiator, vented to the atmopshese, and having a lower surface positioned above the centerline of said radiator and an upper surface positioned in proximity to or above the upper surface of said radiator, said reservoir including a supply of coolant;

i. a coolant transfer conduit having a first end coupled to said overflow fitting and a second end coupled to said reservoir; and

j. a first one way check valve coupled in series with the fluid flow path from said radiator through said coolant transfer conduit into said reservoir for permitting fluid flow from said radiator into said reservoir when the pressure within said cooling system exceeds a predetermined maximum value;

said cooling system modification apparatus comprising:

(a) a second one way check valve having an input port and an output port coupled in liquid communication with said drain cock and in series with said coolant refill conduit and located between said coolant reservoir and said radiator for transferring coolant from said reservoir into said radiator when the pressure differential across said check valve exceeds a predetermined value; and

(b) a coolant refill conduit having a first end coupled to a low point in said reservoir and a second end coupled to said second one way check valve;

whereby a reduction in the cooling system operating pressure caused by a cooling system leak opens said second check valve and transfers coolant from said reservoir into said cooling system.

29. The method for modifying the cooling system of an internal combustion engine having a remotely positioned coolant accumulator to enable the supply of coolant circulating within said cooling system to be replenished as said engine is operating, said cooling system comprising:

a. a radiator including:
   i. first means for transferring coolant from said engine to said radiator;
   ii. second means for transferring coolant from said radiator to said engine;
   iii. a filler neck disposed at a high point in said cooling system;
   iv. a coolant overflow fitting coupled to said filler neck;
b. a coolant reservoir physically spaced apart from said radiator and vented to the atmosphere, said reservoir having a lower surface positioned above the lower surface of said radiator and including a supply of replacement coolant;
c. a coolant transfer conduit having a first end coupled to said overflow fitting and a second end coupled to said reservoir;
d. a pressure cap for sealing said filler neck to the ambient atmosphere and for venting said radiator to the atmosphere when the internal radiator pressure exceeds a predetermined value;

said method comprising the steps of:

a. connecting one end of a coolant refill conduit to a low point in said reservoir and a second end to a low point in said radiator; and
b. connecting a low pressure one way check valve in series with said coolant refill conduit for enabling fluid to flow from said reservoir into said radiator when the pressure differential across said check valve exceeds a predetermined value, whereby depressurization of said cooling system causes replacement coolant to flow from said reservoir through said coolant replenishment conduit into said radiator as said engine is operating.

4,461,343

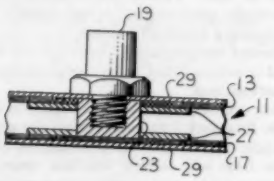
PLATED HEAT PIPE

Kenneth H. Token, St. Charles, and Edward C. Garner, University City, both of Mo., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jan. 28, 1982, Ser. No. 343,534

Int. Cl.³ F28D *15/00*

U.S. Cl. 165—104.26 **7 Claims**



1. A heat pipe comprising:

a single walled case having an internally contained capillary wick which is metallurgically bonded to said case;

a vapor space adjacent said wick;

a working fluid;

means to fill said heat pipe with said working fluid; and

said case having no seams other than at said means to fill said heat pipe with said working fluid.

4. A method of making a heat pipe comprising:

shaping porous wick material to the desired shape of the finished heat pipe;

attaching means to fill said heat pipe with working fluid to said porous wick; and

subjecting said porous wick material and said attached means to fill said heat pipe to a metal deposition process to form an enclosure by bridging the pores in said porous wick material and the joint between said wick material and said means to fill said heat pipe, whereby forming a continuous metal hermetic seal over the entire exterior of said heat pipe.

4,461,344

HEAT EXCHANGER

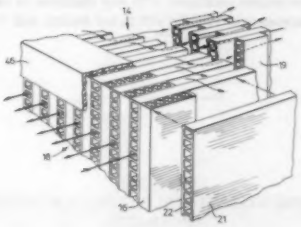
Greg Allen, 73 Woodville Ave., Toronto, Ontario, Canada M4K 2J5, and Wesley Swift, P.O. Box 4365, Station E, Ottawa, Ontario, Canada (K1S 5E4)

Filed Apr. 9, 1982, Ser. No. 366,969

Claims priority, application Canada, Apr. 14, 1981, 375398

Int. Cl.³ F28B *9/08;* **F28F** *3/12*

U.S. Cl. 165—110 **9 Claims**



1. A heat exchanger core, comprising:

a core structure defined by a plurality of spaced-apart sheets of cellular material, each of which has first and second oppositely-disposed end edges and first and second oppositely-disposed side edges the core structure having a first end defined collectively by the first end edges, a second end defined collectively by the second end edges, a first side defined by one of the sheets, a second side defined by another one of the sheets, a top defined collectively by the first side edges, and a bottom defined collectively by the second side edges, and the cells of the sheets defining flow paths, open at the first and second ends of the core structure, for directing gas flows between the first and second ends of the core structure;

spacing means for keeping the sheets spaced apart so that a space extending between the first and second ends of the core structure is defined between each pair of sheets;

sealing means for sealing each of the spaces defined between the sheets along the first and second ends of the core structure;

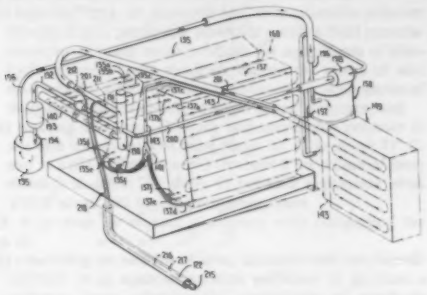
cover means for covering the top and bottom of the core structure to prevent the movement of gases through the top and bottom of the core structure and between the spaces, including a first aperture located in the cover means adjacent to the first end of the core structure and accessing the spaces between the sheets, and a second aperture located in the cover means adjacent to the second end of the core structure and accessing the spaces between the sheets, whereby, heat can be exchanged between a warm gas flow directed from the first aperture through the spaces between the sheets and out the second aperture, and a cold gas flow directed from the second end of the core sturcture to the first end of the core structure through the cells of the sheets; and,

drainage aperture means located adjacent to the first end of the core structure for use in draining condensation accumulating at the bottom of the core structure in the spaces between the sheets.

4,461,345
HEAT-AUGMENTED HEAT EXCHANGER SYSTEM

Gerry Vandervaart, Niagara Falls, Canada, assignor to Kool-Fire Limited, Niagara Falls, Canada

Continuation-in-part of Ser. No. 87,154, Oct. 22, 1979, Pat. No. 4,311,192, which is a continuation-in-part of Ser. No. 54,647, Jul. 3, 1979, Pat. No. 4,311,191. This application Jan. 18, 1982, Ser. No. 340,281
Int. Cl.³ F28B 9/08
U.S. Cl. 165—113 10 Claims

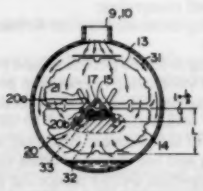


1. A heat exchanger comprising coil means for conducting therethrough a heat exchange medium which during normal operation creates condensation as a by-product which unless otherwise provided for could freeze and adversely effect the operation of the heat exchanger, conduit means for conducting the heat exchange medium at relatively high temperature during the operation of said heat exchanger, a by-pass conduit having an inlet and an outlet connected to said conduit means, a portion of said by-pass conduit between said inlet and outlet being disposed at an area at which the condensation collects whereby the high temperature of the heat exchange medium passing through the by-pass conduit portion radiates heat and prevents freezing of the condensate, the area at which condensation collects includes a discharge conduit through which condensate is adapted to flow from an entrance point to a discharge point, said by-pass conduit portion being disposed in said discharge conduit, and said by-pass conduit portion being defined by a pair of legs and a bight whereby the heat exchange medium flows through one of said pair of legs in a direction from said entrance point toward said discharge point and then is reversed by said bight to flow in the other of said pair of legs in a direction from said discharge point to said entrance point.

4,461,346
FEEDWATER HEATER

Yoshiyuki Hoshino; Shyuichi Imazu, both of Hitachi; Masahiko Miyai, Mito; Yoshikuni Oshima, Hitachi, and Masakiyo Izumiya, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 28, 1981, Ser. No. 306,234
Claims priority, application Japan, Sep. 29, 1980, 55-134330
Int. Cl.³ F28B 9/10
U.S. Cl. 165—114 10 Claims



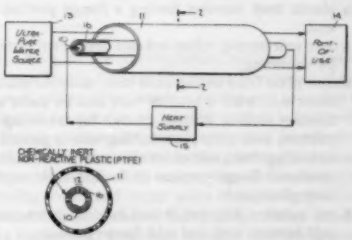
1. In a feedwater heater having a shell defining a feedwater heating chamber and provided with a piping for introducing at least one heating fluid into said feedwater heating chamber, a plurality of U-bent heat transfer tubes extended in the longitudinal direction of said shell in such a manner as to form an upper tube nest and a lower tube nest, a water chamber section formed at one end of said shell and having a water inlet chamber to which one of said tube nest is connected and a water outlet chamber to which the other of said tube nests is connected, a vent tube disposed between said tube nests and adapted for extracting and discharging non-condensed gas, and a plurality of tube supporting plates arranged to support said heat transfer tubes and said vent tube at a plurality of points spaced in the longitudinal direction of said shell at a predetermined pitch,

an improvement which comprises a baffle disposed along said vent tube and adapted to interrupt the flow of said heating fluid from said upper tube nest into said lower tube nest in the area around said vent tube, said baffle having a horizontal portion projecting from each of opposite sides of said vent tube and an inclined portion extending into said one of the tube nests from an end of each horizontal portion, the length of said inclined portion being varied so as to have a shortest length at the furthest distance longitudinally of said shell from said water chambers.

4,461,347
HEAT EXCHANGE ASSEMBLY FOR ULTRA-PURE WATER

Howard M. Layton, New Fairfield, and William Fenton, Danbury, both of Conn., assignors to Interlab, Inc., Danbury, Conn.

Filed Jan. 27, 1981, Ser. No. 228,739
Int. Cl.³ F28F 19/04; H05B 3/82; F24H 1/20
U.S. Cl. 165—133 10 Claims



1. A heat exchange assembly for heating or cooling a process liquid, such as ultra-pure water, without adversely affecting the quality thereof, said unit comprising:

A. an inner pipe formed of high-strength metal having good thermal conductivity, said inner pipe containing a heat exchange agent whose temperature differs from that of said process liquid;

B. a thin-walled tube extruded of a heat-shrinkable synthetic plastic material non-reactive with said liquid, said tube having an inner diameter which is initially slightly larger than the outer diameter of the pipe and being shrunk-fit on said inner pipe to define a pore-free outer layer having a degree of thinness in a range whose upper limit is about 7 mils affording a thermal bridge;

C. a flow passageway surrounding said inner pipe for said process liquid to effect heat transfer between said agent and said liquid by conduction through the metal of said inner pipe and said thermal bridge, one wall of said passageway being defined by said non-reactive outer layer, the opposing wall of said passageway being defined by a outer pipe of synthetic plastic material in contact with said

liquid and non-reactive therewith, said outer pipe being coaxial with said inner pipe; and

D. terminations at either end of said coaxially-arranged inner and outer pipes to couple said passageway to inlet and outlet fittings for said process liquid, said terminations each comprising a plastic union having male and female components and a bushing telescoped within the female component, an end of the inner pipe passing through the bushing, the end of the outer pipe being flared to define a flange that is compressed between a face of the male component and a complimentary face of the bushing, the male component being secured to the end of the outer pipe, the female component being detachably secured to the male component to maintain the flange of the outer pipe compressed between the bushing and the face of the male component.

4,461,348

HEAT EXCHANGER

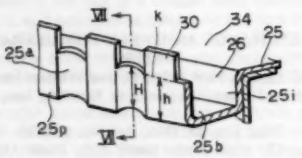
Hiroaki Toge, Oubu; Shinichi Esaka, Kariya; Yutaka Murakami, Nishio, and Toshiaki Murao, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 31, 1983, Ser. No. 480,925

Claims priority, application Japan, Apr. 9, 1982, 57-51499[U]

Int. Cl.³ F28D *9/02*

U.S. Cl. 165—173 **12 Claims**



1. A heat exchanger comprising;

a plastic tank member having a flange portion at its open end;

a core unit having tubes and fins connected with each other by soldering;

a core plate fixed to said core unit, said core plate having an inner side wall, a bottom wall and an outer side wall to thereby form a holding groove for receiving said flange portion, said core plate having also a plurality of hooks extending from said outer side wall, said hooks being bent over said flange portion to fix said tank member to said core plate; and

a seal member disposed in said holding groove and between said bottom wall and said flange portion;

wherein the improvement comprises;

a concave-convex portion formed in an outer surface of at least one of said inner side wall, outer side wall and hook of a size such that the solder will be attached thereto by surface tension during said soldering to leave the core plate substantially solder free.

4,461,349

LONG-LINE-DRIVE PATTERN FOR IN SITU GASIFICATION OF SUBTERRANEAN CARBONACEOUS DEPOSITS

Donald K. Wunderlich, Richardson, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 6, 1982, Ser. No. 446,901

Int. Cl.³ E21B *43/243, 43/30*

U.S. Cl. 166—245 **4 Claims**

1. An improved line-drive process for gasifying a subterranean carbonaceous deposit comprising the steps of:

(a) positioning injection well bores and proproduction well bores in spaced-apart rows substantially perpendicular to a line-drive direction,

(b) positioning a plurality of rows of intermediate linking wells between said row of injection wells and said row of production wells,

(c) establishing a combustion link between each injection well and respective one of said production wells in the line-drive direction by means of said intermediate linking wells lying therebetween,

(d) injecting a free oxygen containing gas into the deposit underlying said pattern through said injection wells,

(e) igniting said pattern through the row of said linking wells adjacent to said injection wells, and

(f) recovering gasification product gas through production well bores.

4,461,350

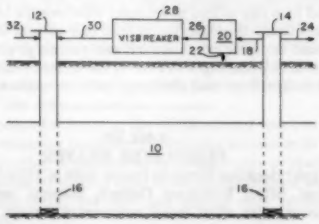
THERMAL SOLVENT RECOVERY METHOD UTILIZING VISBROKEN PRODUCED CRUDE OIL

William C. Hunt, III, Farmers Branch, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 16, 1981, Ser. No. 331,425

Int. Cl.³ E21B *43/24, 43/40*

U.S. Cl. 166—272 **10 Claims**



9. A method for the recovery of viscous crude oil from a subterranean, viscous crude oil-containing formation penetrated by at least one injection well and one spaced apart production well comprising:

(a) producing crude oil from the formation via said production well;

(b) subjecting at least a portion of said produced crude oil to a thermal visbreaking operation to produce solely by said visbreaking operation a hot visbroken crude oil having a viscosity within the range of 80 to 95% less than the viscosity of the produced crude oil; and

(c) injecting said hot visbroken crude oil into said formation via said injection well to reduce the viscosity of the oil in the formation and displace the oil through the formation toward said production well thereby allowing a greater recovery of oil from the formation.

4,461,351
PROCESS FOR PARTIALLY OR COMPLETELY PLUGGING PERMEABLE ZONES IN A SUBTERRANEAN FORMATION

David O. Falk, Denver, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Feb. 28, 1983, Ser. No. 470,752
Int. Cl.³ E21B 33/138
U.S. Cl. 166—295 23 Claims

1. A process for selectively plugging highly permeable zones of a subterranean formation comprising the steps of:

(a) injecting urea, an aldehyde and an acrylamide polymer into the highly permeable zones via a well in fluid communication with said zones, wherein the equivalents of aldehyde groups of said aldehyde exceed the moles of said urea and the moles of said urea exceed the equivalents of unhydrolyzed acrylamide groups of said polymer; and

(b) reacting said urea, aldehyde and acrylamide polymer in situ at a temperature of from about 20° C. to about 75° C. and at a pH of from about 3 to about 9 for a time of from about 2 to about 72 hours to produce a polymer resin which plugs said highly permeable zones.

18. A process for making a polymer resin comprising the steps of:

(a) combining an amount of urea, aldehyde and acrylamide polymer in an aqueous solution sufficient to produce a polymer resin, wherein the equivalents of aldehyde groups of said aldehyde exceed the moles of said urea and the moles of said urea exceed the equivalents of unhydrolyzed acrylamide groups of said polymer;

(b) adjusting the pH of said solution to from about 3 to about 9; and

(c) reacting said solution at a temperature of from about 20° C. to about 75° C. for a time of from about 2 to about 72 hours to make said polymer resin.

4,461,352
PROCESS FOR SELECTIVELY PLUGGING A SUBTERRANEAN FORMATION WITH A POLYMER GEL

David O. Falk, Denver, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Feb. 28, 1983, Ser. No. 470,753
Int. Cl.³ E21B 33/138
U.S. Cl. 166—295 21 Claims

1. A process for selectively plugging highly permeable zones of a subterranean formation comprising the steps of:

(a) injecting an acrylamide polymer, an aldehyde and a borate salt into the highly permeable zones via a well in fluid communication with said zones, wherein the equivalent ratio of aldehyde groups to unhydrolyzed acrylamide groups injected into said zones is at least about 1:1 and the equivalent ratio of borate ions to unhydrolyzed acrylamide groups injected into said zones is at least about 0.10:1; and

(b) gelling said acrylamide polymer, aldehyde and borate salt in situ at a temperature of from about 20° C. to about 100° C. and a pH of from about 7 to about 12 for a gelation time of from about 2 to about 72 hours to produce a polymer gel which substantially plugs said highly permeable zones.

16. A process for gelation of an acrylamide polymer comprising the steps of:

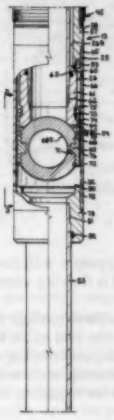
(a) combining the acrylamide polymer with an aldehyde and a borate salt in an alkaline aqueous solution, wherein the equivalent ratio of aldehyde groups to unhydrolyzed acrylamide groups is at least about 1:1 and the equivalent ratio of borate ions to unhydrolyzed acrylamide groups is at least about 0.10:1; and

(b) gelling said solution at a temperature of from about 20° C. to about 100° C. and at a pH of from about 7 to about 12 for a gelation time of from about 2 to about 72 hours to produce a polymer gel.

4,461,353
WELL SAFETY VALVE

Michael B. Vinzant, Carrollton; Steven C. Speegle, Flower Mound; Michael W. Meaders, Lewisville, and Robert L. Hilts, Dallas, all of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Jul. 22, 1982, Ser. No. 401,005
Int. Cl.³ E21B 34/10
U.S. Cl. 166—322 16 Claims



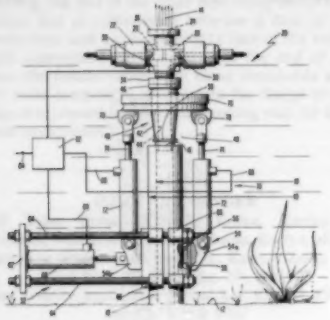
1. A safety valve for a well completion utilizing a submersible pump comprising: a housing adapted to be connected in a production well tubing string above a packer seat in casing to form a tubing-casing annulus above said packer in said well, said tubing having a submersible pump suspended therefrom in said casing below said packer; said housing having seal means thereon and port means therein, cooperating with tubing port means, including lower and upper ports in said tubing above said packer, and defining a central flow passage and an annular flow passage for pumped fluid flow through said tubing ports and said valve between said tubing-casing annulus above and the casing in communication with the producing formation below said packer; valve means in said central flow passage and said annular flow passage for controlling and separating flow through said flow passages including a valve ball member connected to an upper seat member in said central flow passage; valve means in said annular flow passage above said central flow passage valve means; a lower annular seat member in said housing around said central flow passage engageable by said central passage valve ball member; valve operator means in said housing coupled with said annular and central flow passage valve means for substantially simultaneously opening said annular and central valve means and moving said central passage valve ball member to sealingly engage said housing lower seat member, permitting separate flow through said passages between upper and lower tubing ports, said operator means including a spring for disengaging said central passage valve ball member from said housing seat member and substantially simultaneously closing said central and annular flow passages to flow and directing pumped well fluids to said casing below said packer for recirculation.

4,461,354

HYDRAULIC WELL CAP

Allen M. Buras, 109 E. Collins Dr., Buras, La. 70041, and Rebert E. Prest, III, P.O. Box 95, Empire Machine Works, Inc., Empire, La. 70050

Filed Aug. 13, 1981, Ser. No. 292,703
Int. Cl.³ E21B *33/064, 19/16, 43/12*
U.S. Cl. 166—343 **34 Claims**



1. Apparatus for capping a well having a pipe stem through the end of which fluid is flowing uncontrollably, the apparatus comprising:

(a) a valve having a flow passage therethrough;

(b) means connected to said valve for coupling said valve to the pipe stem, said pipe-coupling means also having a flow passage communicating with said valve flow passage;

(c) clamping means for engaging the exterior surface of the pipe stem; and

(d) means for connecting said clamping means and said valve for axially aligning the flow passage of said pipe-coupling means with the pipe stem end and for axially displacing the pipe-coupling means relative to said clamping means into fluid-tight engagement with the pipe stem end, said displacing means acting against the pipe stem through said clamping means,

wherein said pipe-coupling means includes means for establishing a press-fit connection with the pipe end including a hollow externally tapered plug member having a minimum and maximum outside diameter respectively less than and greater than the inside diameter of the pipe stem, and

wherein the outside surface of said plug member is generally smooth and the taper of said plug is such to create said press-fit sealing relationship with the interior of the pipe stem when said plug member is displaced substantially axially into the end of the pipe stem.

4,461,355

CULTIVATOR ROW UNIT WITH RIDGER/BEDDER IMPLEMENT

Richard L. Peterson, Le Sueur; James A. Johnson, Cologne; Roger J. Scheurer, Kasota, and Richard W. Steinberg, Mankato, all of Minn., assignors to Hiniker Company, Mankato, Minn.

Filed Jun. 1, 1982, Ser. No. 383,595
Int. Cl.³ A01B *39/08, 39/14*
U.S. Cl. 172—156 **19 Claims**

1. A cultivator mounted on an agricultural tool bar pulled by a traction vehicle for working the soil between adjacent crop rows with a plurality of implements and forming the thus worked soil into ridges along said crop rows, said cultivator comprising:

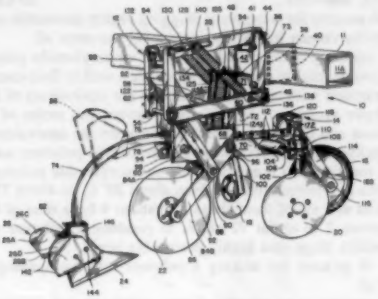
a frame rigidly coupled to said tool bar;

a gauge wheel for supporting said frame;

first and second disc blades coupled to said frame and positioned aft of and laterally with respect to said gauge wheel, each disc blade having a concave work surface for clearing a strip of top soil and trash, mixing them and displacing the mixture laterally between said disc blades;

a cutting coulter coupled to said frame and positioned aft of said first and second disc blades and in line with said mixed soil and trash for dividing said trash;

a sweep coupled to said frame by means of a shank and



positioned aft of and aligned with said cutting coulter for engaging and breaking the soil in undercutting and exposing weed roots in said soil; and

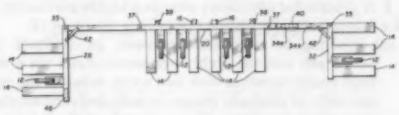
a ridger implement mounted to said shank immediately above said sweep for engaging the soil in forming the soil and trash mixture into a pair of parallel ridges located on each side of said shank and positioned along the adjacent crop rows.

4,461,356

PLANTING IMPLEMENT WITH END SEGMENTS REARWARDLY PIVOTAL TO FORM QUADRILATERAL STRUCTURE

Gary A. Larson, R.R. 3, Box 150, Canby, Minn. 56220

Filed Mar. 8, 1982, Ser. No. 355,912
Int. Cl.³ A01B *65/02*
U.S. Cl. 172—311 **6 Claims**



6. An agricultural planting implement of the type adapted for towing behind a vehicle, the implement comprising: elongated support beam means, said support beam means being divided into a plurality of segments, namely a center segment and two segment pairs each of which is carried at an end of the center segment and each of which is comprised of upper and lower end segments, the upper and lower end segments of each of said pairs being of approximately equal length while one pair of upper and lower end segments is shorter in length than the other pair of upper and lower end segments, the upper and lower end segments of each pair being pivotally connected to each other at the inner and outer ends thereof respectively for rearward rotation of each of the upper end segments, each of said lower end segments of each pair being pivotally connected at its inner end to the adjacent end of the center segment for rearward rotation, and telescopic lengthening means included in the shorter end segment of said lower end segments for extending its length equal that of the other of said lower end segments and a plurality of equally spaced planter units carried on said center and said upper end segments of said support beam means, whereby said upper end segments may be pivoted

rearwardly relative to said center segment and said lower end segments may be pivoted rearwardly relative to said center segment, said shorter lower end segment being extended, so as to bring said upper end segments into contact with each other thereby forming a quadrilateral framework structure, the lengths of said segments being designed and arranged so as to offset the spacing of said planter units carried by said end segments by about one half of the spacing of said planter units carried by said center segment when said quadrilateral structure is formed, and connection means for rigidly connecting said upper end segments together.

4,461,357

FURROWER WITH REMOVABLE SHARES

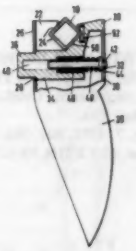
Walter Kolb, Betzdorf, and Helmut Weid, Niederdreisbach, both of Fed. Rep. of Germany, assignors to Wolfe-Gerate GmbH, Fed. Rep. of Germany

Filed Mar. 19, 1982, Ser. No. 359,782

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1981, 8108616[U]

Int. Cl.³ A01B *1/22*

U.S. Cl. 172—373 **9 Claims**



1. A furrower for forming seed furrows in beds the furrower comprising:

a support pipe;

means for attaching the support pipe to a handle for supporting the furrower;

a plurality of shares attached to the support pipe, each share having a head portion with an opening therein;

a respective clamping member held within the head portion of each share, the clamping member having a surface for contacting the support pipe, the clamping member being movable between a clamping position at which the surface contacts the support pipe and a released position at which the surface is spaced away from the support pipe; when the clamping member is in the clamping position, the surface engaging the support pipe prevents motion of the share with respect to the support pipe; the share being removable from the support pipe when the clamping member is in the releasd position;

a spring for urging the clamping member into the clamping position,

a manual release push knob extending from the clamping member and the knob serving to move the clamping member from the clamping position to the released position when a force sufficient to overcome the urging of the spring is applied to the push knob;

said support pipe being of cross section having angles, and in which both the head portion of the share and the clamping member have clamping section cutouts which mate with the angled shape of the support pipe.

4,461,358

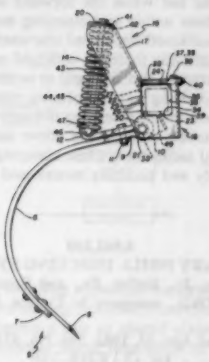
LEAF SPRING SHANK ASSEMBLY

Howard L. Lewison, Hutchinson, Minn., assignor to Dynamics Corporation of America, Greenwich, Conn.

Filed May 17, 1982, Ser. No. 378,883

Int. Cl.³ A01B *61/04*

U.S. Cl. 172—705 **15 Claims**



1. A leaf spring shank assembly comprising:

(a) a leaf spring shank member having a curved intermediate portion and a forwardly and downwardly extending lower end portion constructed and arranged to have a ground-working tool secured thereto;

(b) the other and upper end portion of said shank member being reversed upwardly and rearwardly upon itself at a point forward of said intermediate portion and thereby defining a transverse pivotal mounting sleeve for said member and extending rearwardly from said sleeve above and in overlying relation along said intermediate portions of said shank member;

(c) the terminal portion of said other and upper end portion being reversed upon itself upward, forwardly and then downwardly and thereby defining a bearing sleeve for a compression spring guide;

(d) connector means located between said pivot sleeve and said bearing sleeve extending between said overlying and intermediate portions of said shank member and fixedly connecting the same in said overlying relation;

(e) an elongated ground-working machine transverse frame bar which is rectangular in cross-section;

(f) a rearward facing channel member pivotally supporting said shank mounting sleeve and said shank upon its lower portions;

(g) pressure rod means pivotally mounted on said bearing sleeve and extending upwardly through said channel member in piercing sliding relation;

(h) coiled compression spring means surrounding said pressure rod means and extending between said channel member and said terminal portion of said shank member and urging the latter downwardly;

(i) said channel member, when considered in cross-section having a base and a pair of leg elements extending rearwardly therefrom;

(j) said leg elements having juxtapositioned openings formed in their lower portions;

(k) said channel member having juxtapositioned essentially right-angled portions of its legs cut away at its lower front side and having the portion of its base defined by said cut-away portions of its legs also cut away to adapt said member to receive the rearward and under-side portions of said frame bar therewithin in conforming configuration;

(l) an L-shaped rearwardly facing channel member cooperatively clamping said first mentioned channel member to said frame bar and having a vertical base and rearwardly

extending support legs with juxtapositioned transverse openings extending through the lower portions of said legs and being aligned with said openings in said first mentioned channel member;

(m) said clamping channel member having a pair of transversely spaced rearwardly extending ears at its upper end constructed and arranged to bear against an upper surface of said frame bar when the forward surface thereof is brought to bear within said clamping member;

(n) the juxtapositioned upper and rearward portions of said legs being cut away to define with said ears a right-angled cavity constructed and arranged to receive said frame bar therewithin in snug and conforming relation; and

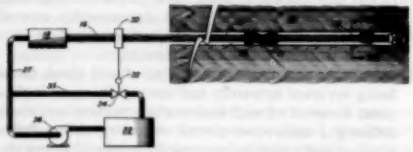
(o) threaded bolt means extending through said bases of said channel members immediately above said frame bar and drawing said members in close clamping relation thereto to effectively and pivotally mount said shank upon said frame bar.

4,461,359

ROTARY DRILL INDEXING SYSTEM

Emrys H. Jones, Jr., Butler, Pa., and Ronald W. Umphrey, Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Apr. 23, 1982, Ser. No. 371,097
Int. Cl.³ E21B *7/04*
U.S. Cl. 175—61 **3 Claims**



1. In the drilling of a borehole through a subterranean formation wherein a drilling fluid is circulated through a rotary drill string within said borehole and returned to the surface thereof through the borehole annulus surrounding said drill string, said drill string having a drill bit at the end thereof, and the directional advance of said drill bit is controlled by deflecting said drill string in response to pulsations in the flow of drilling fluid through said drill string, the improvement comprising synchronizing said pulsations in the flow of said drilling fluid with the rotation of said drill string by establishing a flow rate of said drilling fluid supplied to said drill string, generating a function represenatative of the rotational position of said drill string, and in response to said function repeatedly changing the flow rate of drilling fluid to said drill string in synchronization with a designated rotational position of said drill string while maintaining the flow of drilling fluid through said drill string in a constant direction.

4,461,360

BIT EXTENSION GUIDE FOR SIDEWALL CORER

Houston B. Mount, II, Tulsa, Okla., assignor to Standard Oil Company, Chicago, Ill.

Continuation-in-part of Ser. No. 356,613, Mar. 9, 1982, abandoned. This application Sep. 29, 1982, Ser. No. 426,305
Int. Cl.³ E21B *49/06*
U.S. Cl. 175—78 **10 Claims**

1. An apparatus for drilling a sidewall core from a borehole comprising:

an elongated housing having an opening in the wall thereof;

a fixed plate secured to said housing and having guide slot means;

a drive plate adjacent to said fixed plate and movable in a straight line substantially parallel to the axis of said housing;

drive means to move said drive plate; and

a cutting assembly mounted in said housing and having guide means engaging said guide slot means and said drive

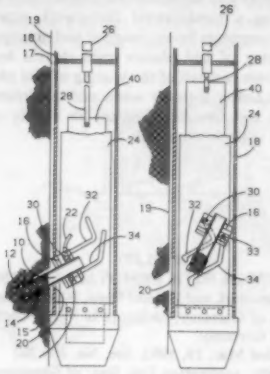


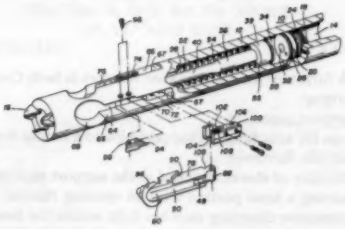
plate to extend and retract said assembly through said opening of said housing in response to the movement of said drive plate.

4,461,361

UNDERREAMER WITH CYLINDRICAL BOSS AND SOCKET HINGE ASSEMBLY FOR THE CUTTER ARM

Benjamin H. Fuchs, Long Beach, Calif., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 7, 1981, Ser. No. 327,981
Int. Cl.³ E21B *10/32*
U.S. Cl. 175—269 **6 Claims**



1. An underreamer tool for enlarging an earth borehole, said tool comprising a tubular body having means for driving connection with a drill string; a plurality of cutter arms, including a cutter element, attached to said body by hinge means for movement between a retracted position wherein each arm and cutter element is disposed within an appropriately sized opening in said body and an outwardly extended position wherein said cutter element engages the borehole, said hinge means comprising:

a hinge plate disposed in a recess in said body adjacent the upper end of said opening and defining a lower terminal end extending into said opening;

the upper end of said arm and the lower terminal end of said plate defining cooperating cylindrical boss and socket engagement members with the axis of said cylindrical boss and socket of said members perpendicular to the plane of the hinged movement of the arm and: said socket member defining a cylindrical bore open along one side with the width of said opening being less than the diameter of said socket; and,

a substantially cylindrical boss member of generally common radius and having a diameter greater than the width of said opening to provide a relatively large area of engagement between said engaged boss and socket member, with said boss member terminating in an integral reduced thickness area defining a neck portion projecting through said opening, said neck portion having a thickness less than the width of said opening to permit free hinged movement of said boss in said socket whereby all forces on said hinge means are supported at said large area of engagement between the cylindrical socket member and the cylindrical boss member; and,

means for retaining said plate within said recess.

4,461,362

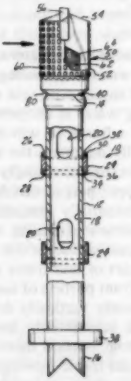
MINING DRILL WITH APERTURES AND COLLARS PROVIDING FOR FLOW OF DEBRIS

Arnol Staggs, and Margarita C. Flores, both of 1155 Lincoln St., Wyandotte, Mich. 48192

Filed Sep. 29, 1982, Ser. No. 427,427

Int. Cl.³ E21B *17/10*; E21C *9/00*

U.S. Cl. 175—325 **11 Claims**



1. A mining drill mountable on a drilling machine comprising;

an elongated shaft having first and second ends and a bore extending longitudinally therethrough;

a cutting bit mountable on the first end of the shaft, the cutting bit having first and second ends;

a cutting tip mounted on the first end of the cutting bit;

a partial bore extending longitudinally through the cutting bit from the second end and aligned with the bore in the shaft;

a first aperture formed in the cutting bit in communication with the bore in the cutting bit for directing debris generated during the drilling operation into the aligned bores in the cutting bit and shaft;

a second aperture formed in the shaft and disposed in communication with the bore in the shaft; and

an annular collar mounted on the shaft adjacent to the second aperture, the collar having a top edge spaced from the shaft and an inclined surface extending between the top edge and the shaft in communication with the second aperture for directing debris through the second aperture into the bore in the shaft.

4,461,363

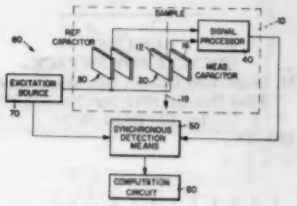
HIGH-SPEED CAPACITIVE WEIGHING METHOD AND APPARATUS

Nicholas J. Loy, Clifton, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jul. 26, 1982, Ser. No. 401,680

Int. Cl.³ G01G *3/14, 11/16, 17/00*

U.S. Cl. 177—1 **38 Claims**



1. Capacitive weighing apparatus comprising:

(a) a capacitive sensing transducer comprising a measuring capacitor having a pair of spaced plates, said capacitive sensing transducer being responsive to the passage of a sample between said pair of spaced plates for generating a transducer output comprising a time-variable signal proportional to the instantaneous capacitance between said pair of spaced plates;

(b) an excitation source for applying a driving signal to said transducer; and

(c) calculating means responsive to said transducer for measuring the mass of a sample as it passes through said transducer, said calculating means comprising integrating means for generating a signal indicative of the integral of said time-variable signal over a predetermined interval of time.

4,461,364

FLEXURE COUPLING MEMBER FOR PRECISION WEIGHING APPARATUS

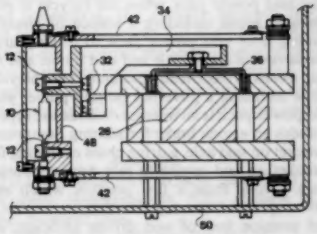
Ernst Strickler, Wolfhausen, Switzerland, assignor to Mettler Instrumente AG, Greifensee, Switzerland

Filed Jun. 25, 1982, Ser. No. 391,994

Claims priority, application Switzerland, Sep. 2, 1981, 5636/81

Int. Cl.³ G01G *21/24*

U.S. Cl. 177—255 **6 Claims**



1. A flexure coupling member operable to connect a pair of relatively movable components of a weighing apparatus, including an elongated unitary body member (10) formed of a resilient flexible material, said body member including

(a) a pair of clamping end portions (12) arranged at opposite ends of said body member for clamping said body member between a pair of relatively movable weighing components;

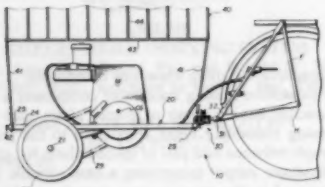
(b) a central bar portion (**18**); and
(c) a pair of flexure portions (**15**) connected between said central bar portion and said clamping end portions, said flexure portions having parallel bending axes that extend normal to the longitudinal axis of said central bar portion;
(d) said central bar portion having in transverse cross-section a uniform non-circular configuration the shorter dimension of which extends parallel with said bending axes.

4,461,365

BICYCLE POWER PACK

Thomas M. Diggs, 1349 Otis St. NE., Washington, D.C. 20017

Filed Dec. 21, 1981, Ser. No. 332,727
Int. Cl.³ B62D *59/04*
U.S. Cl. 180—11 **10 Claims**



1. A device for propelling a bicycle or the like comprising in combination;

a frame having wheels and an overlying cargo carrier means,

a power pack disposed thereon adapted to drive said wheels,

hitching means directly connecting said frame to the bicycle rearwardly thereof adjacent a rear tire at its trailing portion,

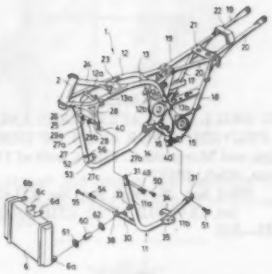
and suspension means disposed between said wheels and said frame whereby road irregularities and the like are absorbed by said suspension means and in part by said hitching means, said hitching means providing the bicycle a complete unobstructed total range of motion including allowing the bicycle to lean over completely as when turning wherein said frame is formed by one pair each of longitudinal and latitudinal braces interconnected to form a substantially rectangular grid, a pair of spaced parallel rearwardly extending swing arms resiliently depending via bolt and springs from forward portions of said longitudinal braces, damping means between trailing terminal portions of said swing arms and said longitudinal braces, said wheels carried by said swing arm on an axle wherein said power pack includes freewheeling means to disengage said power pack when the bicycle is moving at an adequate speed including a source of electrical energy coming from said power pack to drive plural electrical assessories on the bicycle and said frame, and male-female plug means to electrically disconnect the bicycle from said frame including a governor on said power pack wherein said power pack is an internal combustion type engine and includes an engine brake for starting comprising a driven sprocket on said axle, a drive chain extending from a drive sprocket on said engine to said driven sprocket, a brake block pivotal from a first position which engages said driven sprocket, thereby retarding its motion, and a second position free of said driven sprocket, and linkage means for moving said brake block from said first to said second positions wherein said cargo carrier means is removable, and includes a plurality of depending leg members fastened to corner areas of said frame, and a basket area defining a horizontal support area having a perimetral wall which overlies said frame wherein said damping means includes first and second springs disposed on opposed sides of said swing arm trailing portion, a resilient plug between said swing arm trailing portion and said longitudinal brace, said plug abutting one of said springs and having a third spring thereover, said springs, swing arm, brace and plug all having a fastening bolt extending therethrough.

4,461,366

FRAME FOR MOTORCYCLES

Kazuo Honda, Yokohama, Japan, assignor to Honda Motor Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1982, Ser. No. 418,646
Claims priority, application Japan, Sep. 18, 1981, 56-148264; Sep. 19, 1981, 56-139436[U]; Feb. 1, 1982, 57-15313
Int. Cl.³ B62K *11/04;* **B62M** *7/02*
U.S. Cl. 180—229 **16 Claims**



1. In a motorcycle including a water-cooled engine, a radiator operable to cool water for cooling said engine, passage means connecting said engine with said radiator and forming a circuit for said cooling water in cooperation with said engine and said radiator, and a frame on which said engine and said radiator are supportedly mounted, the improvement wherein said frame comprises: at least one axially extending main frame member forming an upper part of said frame, said main frame member having a substantially horizontally extending front portion and a rear portion extending rearwardly from said front portion; and at least one separable hollow tubular member forming a lower part of said frame and having (i) a front portion joined to said front portion of said main frame member and extending substantially vertically downwardly therefrom and (ii) a rear portion substantially horizontally rearwardly extending from said front portion thereof and joined to said rear portion of said main frame member, said hollow tubular member being separable from said main frame member, the interior of said hollow tubular member forming part of said circuit for said cooling water; and coupling means for disjoinably joining said separable hollow tubular member to said main frame member.

4,461,367

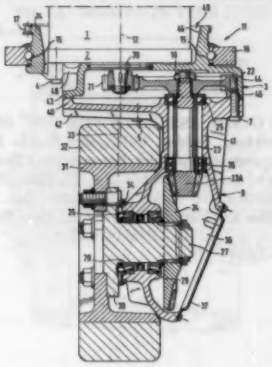
DRIVE TRAIN FOR A STEERABLE DRIVE WHEEL OF A VEHICLE

Johann Eichinger, Vaterstetten; Richard Strehler, Unterfoehring, and Max Bartl, Munich, all of Fed. Rep. of Germany, assignors to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co., Munich, Fed. Rep. of Germany

Filed Aug. 6, 1982, Ser. No. 405,794
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1981, 3133027
Int. Cl.³ B60K *17/30;* **B62D** *5/10*
U.S. Cl. 180—252 **7 Claims**

1. A drive train for a steerable drive wheel of a vehicle, comprising a drive train housing which can be supported on the vehicle frame for pivotal movement about a vertical axis by a slewing arrangement, which drive train housing is divided into an upper housing which houses a spur gear stage and a lower housing which houses a bevel gear stage, the upper and

lower housings being connected at a junction, a pinion of the spur gear stage being mounted on the drive shaft of a motor mounted on the upper housing coaxial with the drive train housing pivot axis and engaging a further gear mounted on a vertical bevel-pinion shaft of the bevel gear stage, which shaft



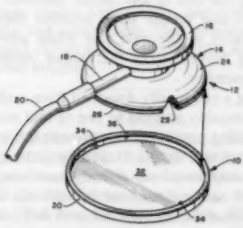
extends across the junction, a bevel gear being mounted on a horizontal driven shaft, one end of which driven shaft projects from the drive train housing and supports a drive wheel, the bevel-pinion shaft and the driven shaft being rotatably supported in the lower housing and the slewing arrangement being mounted on the upper housing.

4,461,368

DIAPHRAGM COVER FOR A STETHOSCOPE

R. Gilles Plourde, 5025 MacDonald Ave., #104, Montreal, Quebec, Canada H3X-2V2

Filed Apr. 15, 1982, Ser. No. 368,749
Int. Cl.³ A61B *5/02, 7/02*
U.S. Cl. 181—131 **5 Claims**



1. In combination:

a stethoscope having a diaphragm portion in the form of a cup-shaped element receiving a flat diaphragm element;

a removable cover releasably attached at an end portion of the cup-shaped element comprising in combination;

a semi-rigid rim having a diameter slightly larger than said end portion;

a resilient, continuous, imperforate, flexible, and deformable sheet of sterilizable elastomer attached to the outer edge of the rim; and

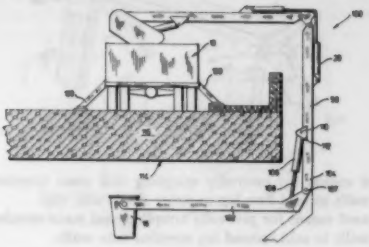
retaining means comprising a plurality of protrusions mounted on the inner surface of the rim engaging the outer edge of the end portion of the cup for releasably maintaining said cover on said diaphragm portion.

4,461,369

ARTICULATED BOOM AND ASSEMBLY THEREFOR

Joseph Amador, Brampton, Canada, assignor to Amador Hydraulic Services Limited, Brampton, Canada

Filed Mar. 30, 1981, Ser. No. 248,960
Int. Cl.³ B66F *11/04*
U.S. Cl. 182—2 **14 Claims**



1. An articulated boom and assembly for carrying a bucket or platform suitable for carrying a person, comprising:

(a) a lower boom arm;

(b) an upper boom arm foldable over the lower boom arm and pivotal with respect to the lower boom arm;

(c) hydraulic cylinders positioned between the boom arms and having piston rods extending therefrom, the hydraulic cylinders with the piston rods, pivotally secured at one end to each boom arm intermediate the boom arm's ends, one hydraulic cylinder being pivotally secured to the underside of the upper arm and the other cylinder pivotally secured to the upper side of the lower arm facing the upper side when the upper arm is folded over the lower arm;

(d) a linkage for pivotally connecting the upper arm, lower arm and hydraulic cylinders, the linkage comprising three points of connection, the points when linearly connected forming a triangle with the points of connection forming the apexes of the triangle, with:

(i) one apex of the triangle directed towards the hydraulic cylinders and piston rods between the upper and lower boom arms and the linkage being pivotally connected at this point of connection to the free ends of the cylinders of piston rods not connected to the arms;

(ii) another apex of the triangle proximate the upper arm being secured to the end of the upper arm proximate this point of connection; and

(iii) another apex of the triangle proximate the lower arm being pivotally secured to the end of the lower arm at this point of connection, the distance between the apexes referred to in subparagraphs (ii) and (iii) being less than the vertical distance from the apex referred to in subparagraph (i) to the line joining the apexes referred to in subparagraphs (ii) and (iii) thus permitting the arms to be rotated approximately 270 degrees from one another.

4,461,370

COLLAPSIBLE SAWHORSE BRACKET

Edwin A. Connell, Hendersonville, N.C., assignor to Action Group, Inc., Newark, Ohio

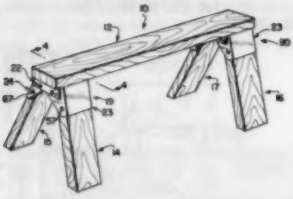
Filed Jul. 11, 1983, Ser. No. 512,747
Int. Cl.³ B27B *21/00;* **F16M** *11/00*
U.S. Cl. 182—153 **19 Claims**

1. A collapsible sawhorse bracket, the combination comprising:

a one-piece main member having a substantially U-shaped transverse cross section defined by a central portion and two depending side walls,

said central portion having means for receiving a fastener to connect said main member to a sawhorse cross beam;

first and second leg members, each formed as one-piece and having a central portion and two depending side walls, each of said leg members having means for connecting a sawhorse leg thereto;



first means for pivotally coupling said main member side walls to said first leg member side walls; and

second means for pivotally coupling said main member side walls to said second leg member side walls.

4,461,371

BRAKE ACTUATOR DEVICE WITH AUTOMATIC SLACK ADJUSTER

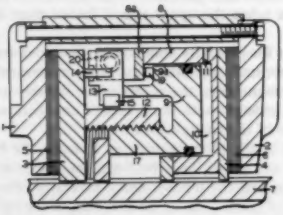
Joachim Feldmann, Neustadt, and Andreas Oberländer, Hanover, both of Fed. Rep. of Germany, assignors to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Aug. 28, 1981, Ser. No. 297,478

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1980, 3032828

Int. Cl.³ F16D 65/52

U.S. Cl. 188—71.9 **7 Claims**



1. A brake device including at least one disc member that is connected to the axle of a vehicle wheel for rotation therewith and at least one brake member having friction linings axially movable into and out of engagement with said at least one disc member, said brake device comprising:

(a) a brake actuator movable in a brake application direction in response to the supply of fluid under pressure thereto to force said at least one brake member toward engagement with said at least one disc member;

(b) expansion means for taking up slack between said at least one brake member and said at least one disc member due to wear of said friction linings comprising:

(i) a sleeve between said brake actuator and said at least one brake member, said sleeve being threadedly connected to said brake actuator so as to be axially adjustable relative thereto;

(ii) a transfer element interposed between said brake actuator and said brake member, said transfer element having a first inclined contact surface formed on the side thereof facing said brake member;

(iii) a second inclined contact surface formed on the side of said brake member facing said first inclined contact surface, said transfer element being engageable with said brake actuator for axial movement therewith, whereby said first and second inclined contact surfaces interact to impart rotation to said transfer element; and

(iv) slip clutch means between said transfer element and said sleeve for transmitting said rotation of said transfer element to said sleeve to accordingly adjust the axial dimension of said sleeve between said brake actuator and said at least one brake member when said brake actuator is operated in a brake application direction.

4,461,372

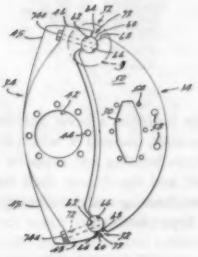
CALIPER GUIDE ASSEMBLY FOR DISC BRAKES

Andrew H. Bekkala, Orland, Calif., and Wayne H. Garrett, Troy, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 169,546, Jul. 17, 1980, abandoned, which is a continuation of Ser. No. 974,186, Dec. 26, 1978, abandoned. This application Dec. 16, 1982, Ser. No. 450,168

Int. Cl.³ F16D 65/09

U.S. Cl. 188—73.34 **15 Claims**



1. In a vehicular disc brake of the type including a torque plate member adapted to be fixedly secured to a nonrotating portion of an axle assembly of an associated vehicle, a caliper member adapted to embrace a brake disc, and guide means mounting said caliper member on the torque plate member for limited sliding translatory movement on the torque plate member in a direction generally parallel to the axis of the vehicle axle, the improvement wherein said guide means comprises:

means mounting one end of said caliper member for pivotal movement on said torque plate member about an axis generally parallel to the axle axis while allowing such limited sliding movement of the caliper member on the torque plate member;

means, including a rail totally detached from said mounting means and releasably secured to one of said members in a position extending parallel to the axle axis but spaced from said pivotal axis and axially extending groove means on the other of said members slidably receiving said rail, operative with said rail secured to said one member to allow such limited sliding movement of said caliper member on said torque plate member while retaining said caliper member against any other movement relative to said torque plate member and operative in response to release of said rail from said one member to allow said caliper member to be pivoted on said torque plate member about said pivot axis;

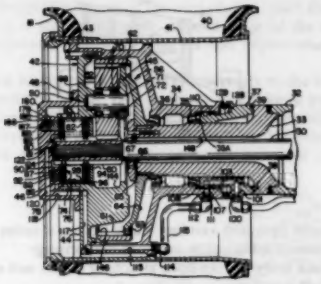
said mounting means being operative, in response to pivotal movement of said caliper member about said pivot axis, to allow separation of said caliper member from said torque plate member at said one caliper member end, whereby to allow removal of said caliper member from said torque plate member; and

the means releasably securing said rail to said one member being operative to release said rail from said one member without axial movement of said rail, or of said releasably securing means, relative to said one member.

4,461,373
DRIVE AXLE ASSEMBLY

William J. Pratt, Cedar Rapids, Iowa, and Robert E. King, Wildwood, Ill., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 30, 1981, Ser. No. 335,896
Int. Cl.[3] B60K *41/26*; F16H *57/10*
U.S. Cl. 192—4 A 20 Claims



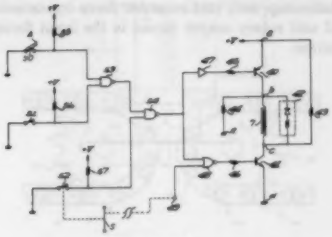
1. A drive axle assembly for a vehicle comprising:
a housing structure having a nonrotatable hollow spindle mounted thereto, said spindle having an external shoulder facing away from said housing structure;
a drive shaft extending through and projecting from the spindle;
a nonrotating spacer ring circumferentially disposed about said spindle and abutting said spindle shoulder;
a bearing disposed circumferentially about said spindle and having an inner race abutting said spacer ring;
a drive hub assembly having an internal chamber and mounted on said bearing for rotation relative to said spindle, said hub assembly being adapted for coupling with a ground engaging drive member;
a planetary gear drive assembly disposed within said hub chamber and operatively interconnecting said drive shaft and said hub;
spacer ring passage means in said spacer ring opening to a sealed cavity between the spacer ring and the hub assembly; and
hub passage means operatively associated with said hub assembly and establishing fluid communication between said sealed cavity and a remote outlet adjacent said planetary drive assembly.

4,461,374
SYSTEM FOR CONTROLLING AN ELECTRO-MAGNETIC CLUTCH FOR AUTOMOBILES

Mitsuo Umezawa, Akikawa, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 15, 1981, Ser. No. 281,253
Claims priority, application Japan, Aug. 12, 1980, 55-111481
Int. Cl.[3] F16D *27/16*
U.S. Cl. 192—21.5 16 Claims

1. In a system for controlling an electro-magnetic clutch for an internal combustion engine mounted on a car, said clutch having a drive member secured to a crankshaft of said internal combustion engine, a driven member adjacent said drive member, and a magnetizing coil provided in one of said members, and said car having a transmission secured to said driven member having multi-stage change gears, comprising
deceleration detecting means for providing an output signal having one logic level upon deceleration of the car,
car speed detecting means for providing an output signal having one logic level when the car speed is lower than a predetermined speed,
logic circuit means response to said output signals of said deceleration detecting means and of said car speed detecting means for providing an output signal having one logic level,
switch circuit means responsive to said circuit means for controlling current flowing through said magnetizing coil, and
said switch circuit means for sending the current through

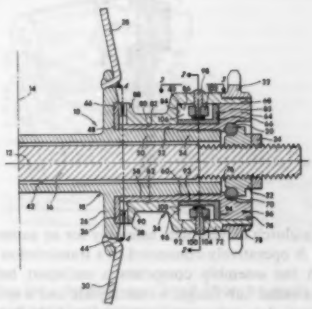


said magnetizing coil in an inverted polarity direction upon occurrence of said output signal having said one logic level from said circuit means and, respectively, for sending the current through said magnetizing coil in a normal polarity direction for engaging said members of said clutch upon occurrence of another logic level of the output signal from said circuit means.

4,461,375
ONE-WAY TRANSMISSION SYSTEM FOR BICYCLES OR THE LIKE

Lawrence G. Brown, 3285 Old 395 N., Carson City, Nev. 89701

Filed Aug. 15, 1977, Ser. No. 824,409
Int. Cl.[3] F16D *23/00*; F16H *3/44*
U.S. Cl. 192—45 16 Claims



1. A one way rotary force transmission system comprising:
a rotary force input means for receiving force from operatively associated drive means to impart an angular input velocity thereto;
a rotary output means for rotation by said rotary force input means in only one direction to impart an angular output velocity thereto;
rotatable force transmission means having at least one transmission member displaceable relative to said rotary force output means between an input force transfer position of direct positive input force transfer between said transmission means and said rotary force output means and a non-force transfer position preventing transfer of force between said rotary output means and said rotary force input means; and
transmission actuating means operatively associated with said one transmission member of said transmission means for causing displacement thereof to the input force trans-

mission position in response to applied force causing an angular input velocity greater than the angular output velocity of said rotary output means and to the non-force transfer position in response to reduction in angular input velocity of said rotary force input means below the angular velocity of said rotary output means and being in substantially non-force transfer and in non-load bearing relationship with said rotatable force transmission means and said rotary output means in the input force transfer position.

4,461,376

CLUTCH DRIVEN PLATE ASSEMBLY WITH MULTI-PART HUB

Thaddeus Lech, Jr., Sterling Heights, Mich., and Kenneth A. Weage, deceased, late of Plymouth, Mich. (by Caroline J. Weage, legal representative), assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 5, 1982, Ser. No. 346,313
Int. Cl.³ F16D *3/14, 13/68*
U.S. Cl. 192—106.2 **11 Claims**

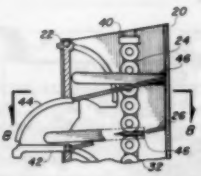
1. In a clutch driven plate assembly for an automotive vehicle clutch operatively connected to a transmission input shaft, wherein the assembly comprises a multipart hub assembly having a radial hub flange, a clutch plate and a spring retainer plate secured together to sandwich the hub flange therebetween, friction facings carried by said clutch plate, said plates and hub flange having axially aligned sets of circumferentially spaced windows therein, and damper springs received in each aligned set of windows, the multipart hub assembly including an inner hub having an internally splined passage receiving the transmission input shaft, and an outer hub having said radial flange integral therewith, intermeshing helical splines formed on the external surface of said inner hub and the internal surface of said outer hub to allow relative axial movement between said hubs upon rotation of the outer hub, the improvement comprising said inner hub being formed entirely of a non-metallic resilient impact-absorbing material and having a plurality of axially extending pockets opening from at least one end thereof, a pair of annular motion limiting end plates received in annular grooves formed in the outer hub beyond the ends of said helical splines, and a plurality of compression springs received in said pockets and abutting one of said motion limiting plates.

4,461,377

COIN OPERATED VENDING STACK

Randall D. Crooks, 460E, 300 North American Fork, Utah 84003

Filed Jan. 26, 1983, Ser. No. 446,247
Int. Cl.³ G07F *11/04*
U.S. Cl. 194—78 **7 Claims**



1. A coin operated vending stack having a series of goods compartments arranged in columns comprising:

a. a stack body having door attaching means and a plurality of roller grooves;

b. a plurality of roller piles within said roller grooves for access to a single compartment upon spreading individual rollers thereapart;

c. a plurality of doors having spreader attaching means with two bottom sides rotatably interfacing with said body door attaching means for entrance therethrough upon pivotal rotation, each door juxtapositioned vertically in columnar fashion;

d. a plurality of spreaders having an integral tapered raised projection on one end and the other end rotatably mounted to said door for linear reciprocation upon opening, forcing said tapered projection between said roller pile;

e. a spring loaded slack eliminator having a tapered bearing surface slideably affixed within said stack body with the tapered surface beneath said roller pile while held under the influence of a spring eliminating slack in the pile when contiguous thereto and allowing sufficient movement of the pile for said spreader tapered projection to penetrate said roller pile when said tapered surface is forced thereinto;

f. a catch having a notch on one end and attachment means on the other slideably affixed within said stack body said notch urgingly interfacing with said slack eliminator linearly driving said tapered surface from direct alignment with said roller pile; and,

g. a coin carriage disposed within said stack body and connected with said catch attachment means for linear movement when appropriate coins are placed therein driving said slack eliminator away from said roller piles a fixed distance, allowing only one door to be opened, thereby penetrating said roller pile with said spreader providing access to said goods compartment with said slack eliminator returning to alignment with said roller pile under the influence of said spring when said door is closed and said spreader retracted.

4,461,378

SIDE DISCHARGE CONVEYOR ASSEMBLY

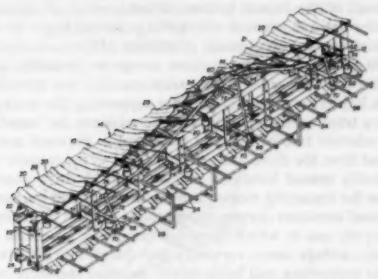
Francis A. Roth, Lakewood, Colo., assignor to Robert L. Alldredge, Denver, Colo.

Filed Jul. 20, 1981, Ser. No. 285,066
Int. Cl.³ B65G *47/46*
U.S. Cl. 198—365 **5 Claims**

1. An improved side discharge conveyor assembly capable of discharging its carried load in a wind row, wherein the conveyor assembly is of the known type having a support framework defining a generally longitudinal pathway for conveyor operation; a transport means carried by the support

framework for relative motion along the longitudinal pathway defined by the support framework and including a plurality of carriages joined to a pulling chain; and a conveyor belt assembly carried by the transport means for motion therewith along the pathway defined by the support framework, the belt assembly being of the type forming an endless conveyor belt from a plurality of segments that are joined together to define the belt, each segment having a central transverse flexible convolution with a shelf extending longitudinally from each of the two opposite longitudinal faces of the convolution, each shelf being attached to a joining leg near the end edge of the shelf for uniting adjacent segments, wherein the improvement comprises:

(a) a first hinge arm connected transversely to the longitudinal pathway of the belt assembly at a joining leg, a first portion of said first hinge arm extending laterally of the conveyor belt on a first side thereof for receiving tilting forces during side discharge operations, and a second



portion of the first hinge arm extending laterally of the conveyor belt center line in opposition to said first portion thereof;

(b) a hinged joining means connected to a carriage and receiving said second portion of the first hinge arm in pivotal connection supporting the belt assembly for local tilting by force applied to said first arm portion of the first hinge arm;

(c) actuator means positionable in the longitudinal pathway of the first arm portion for inducing lateral local tilting of the belt assembly with respect to the transport means to side discharge, in use, at the local tilted portion of the belt assembly; and

(d) means for longitudinally moving the actuator means with respect to the support framework to longitudinally vary the local position of side discharge on a continuous basis for permitting deposit, in use, of the discharged material in a wind row.

4,461,379

PALLET CONVEYOR

Alan M. Papp, Eastlake, Ohio, assignor to Litton Industrial Products, Inc., Cleveland, Ohio

Filed Sep. 2, 1982, Ser. No. 414,067
Int. Cl.³ B65G *37/00*
U.S. Cl. 198—472 **1 Claim**

1. A pallet conveyor assembly for moving, positioning, and transferring a heavy palletized load comprising

a pallet,

support means having a plurality of independent support modules each including

a power driven closed loop vertically oriented link chain, said chain including engagement pins,

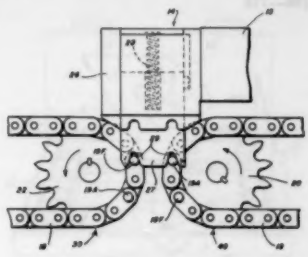
means for supporting said pallet for displacement along said support means in a selected direction,

pin engagement means mounted to said pallet including

an engagement plate having a spaced pair of downwardly opening slots in which one of said engagement pins can be located, and

spring means for biasing said engagement plate between an upper position whereat one of said slots can engage an engagement pin on the top run of said link chain, to a lower position,

adjacent modules being selectively spaced and engagement pins being selectively located on said drive chain so that as



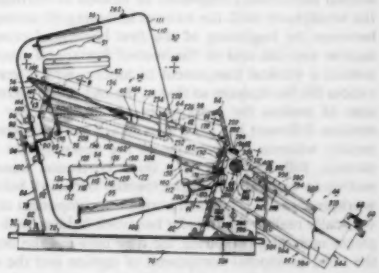
a pallet is driven forwardly from one module to another an engagement pin of the one module will become disengaged from the front slot and an engagement pin of the other module will simultaneously engage the front slot when the engagement plate is at said lower position.

4,461,380

FASTENER FEEDER

Raimonds Grikis, Morton Grove, Ill., assignor to Duo-Fast Corporation, Franklin Park, Ill.

Filed Oct. 8, 1981, Ser. No. 309,704
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—389 **44 Claims**



1. A feeder for orienting uncollated fasteners, each fastener having a head and shank, comprising:

a base means,

a drum means mounted for rotatable movement about its central axis and being adapted to receive a plurality of uncollated fasteners,

rotating means associated with said drum means to rotate said drum means,

scoop means disposed in said drum means and adapted to scoop a portion of said plurality of said fasteners in said drum means as said drum means is rotated,

an inclined orienting assembly extending into said drum means, said orienting assembly including a rotatable orienting roller and an orienting rail defining a fastener path, trough means associated with said fastener path to direct fasteners from said scoop means toward said fastener path, said orienting roller having a plurality of straight longitudinally extending grooves, and

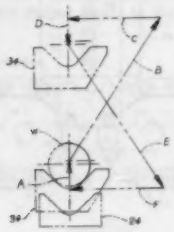
mounting means mounting said orienting assembly in said drum means.

4,461,381

ELEVATOR/LOWERATOR

William E. Rise, Utica, Mich., assignor to Android Corporation, Auburn Hts., Mich.

Filed Mar. 25, 1982, Ser. No. 361,712
Int. Cl.³ B65G *25/02*
U.S. Cl. 198—773 **24 Claims**



1. A work transfer device for vertically transferring workpieces comprising a series of vertically spaced stations supported on a base, a vertically disposed transfer bar having work holders thereon at successive vertically spaced locations whose vertical spacing corresponds to the vertical spacing of said stations, a drive supported on the base and operatively coupled with said transfer bar for causing the transfer bar to repeatedly execute an operating cycle wherein the workpieces are vertically advanced one station per cycle, said drive comprising means for causing each operating cycle to comprise (1) an initial vertical upward component of motion wherein the work holders on the transfer bar lift the workpieces off the stations followed by, (2) a first horizontal component of motion to vertically clear the workpieces of the stations and (3) a second horizontal component of motion to vertically realign the workpieces with the stations including (4) during the time between the beginning of the first horizontal component of motion and the end of the second horizontal component of motion a vertical component of motion which vertically advances the workpieces so that at the end of the second component of motion the workpieces are directly over their next stations followed by, (5) a downward vertical component of motion wherein the workpieces are deposited on these next stations, followed by, (6) a third horizontal component of motion to vertically clear the transfer bar work holders of the workpieces and (7) a fourth horizontal component of motion to vertically realign the transfer bar work holders with the workpieces including (8) during the time between the beginning of the third horizontal component of motion and the end of the fourth horizontal component of motion a vertical component of motion which vertically retracts the transfer bar so that at the end of the fourth horizontal component of motion the transfer bar is in position where it is poised to begin the initial vertical upward component of motion of the next operating cycle, said drive comprising two independent control means each providing control of a respective one of said vertical and horizontal motions, said two independent control means being operated in predetermined relationship during each operating cycle.

19. A work transfer device for vertically transferring workpieces comprising a series of vertically spaced stations supported on a base, a vertically disposed transfer bar having work holders thereon at successive vertically spaced locations whose vertical spacing corresponds to the vertical spacing of said stations, a drive supported on the base and operatively coupled with said transfer bar for causing the transfer bar to repeatedly execute an operating cycle wherein the workpieces are vertically advanced one station per cycle, said drive comprising means for causing each operating cycle to comprise (1) an initial vertical upward component of motion wherein the work holders on the transfer bar lift the workpieces off the stations followed by, (2) a first horizontal component of motion to vertically clear the workpieces of the stations and (3) a second horizontal component of motion to vertically realign the workpieces with the stations including (4) during the time between the beginning of the first horizontal component of motion and the end of the second horizontal component of motion a vertical component of motion which vertically advances the workpieces so that at the end of the second component of motion the workpieces are directly over their next stations followed by, (5) a downward vertical component of motion wherein the workpieces are deposited on these next stations, followed by, (6) a third horizontal component of motion to vertically clear the transfer bar work holders of the workpieces and (7) a fourth horizontal component of motion to vertically realign the transfer bar work holders with the workpieces including (8) during the time between the beginning of the third horizontal component of motion and the end of the fourth horizontal component of motion a vertical component of motion which vertically retracts the transfer bar so that at the end of the fourth horizontal component of motion the transfer bar is in position where it is poised to begin the initial vertical upward component of motion of the next operating cycle and wherein said stations comprise vertically spaced cradles for supporting the workpieces and the transfer bar work holders comprise cradles for supporting the workpieces during transfer, the drive is disposed adjacent the transfer bar and wherein two or more of horizontally disposed members extend from the drive and are connected to the transfer bar at vertically spaced locations and wherein the drive comprises means for imparting motion to at least one of said horizontally disposed members corresponding to the motion of the operating cycle, and in which the drive comprises a vertical guide means, carriage means vertically shiftable on said guide means, means supporting said horizontally disposed members on said carriage means and motive means for imparting horizontal motion to the transfer bar by shifting at least one of said horizontally disposed members on said carriage means and vertical motion by shifting said carriage means on said guide means.

4,461,382

MOTION DETECTOR AND CONTROL SYSTEM FOR AN ACCUMULATING LIVE CONVEYOR

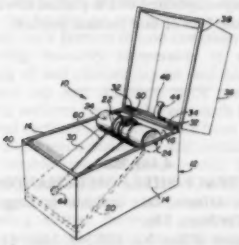
Alan A. Hoover, New Palestine, and Richard D. Harris, Fountaintown, both of Ind., assignors to Pentek Corporation, Indianapolis, Ind.

Filed Nov. 16, 1981, Ser. No. 321,569
Int. Cl.³ B65G *13/07*
U.S. Cl. 198—781 **11 Claims**

1. A system for controlling the operation of an accumulating live conveyor of the type including a plurality of load-carrying rollers supported for rotation about transverse axes, driving means for conveying loads over the load-carrying rollers from an upstream end toward a downstream end of the conveyor, and accumulating means for removing driving engagement of the driving means in selected areas of the conveyor to accumulate loads in such areas, the system comprising position detecting means for detecting a position of a load in a downstream area of the conveyor, first signal means responsive to the detecting means producing a load position-related signal, means for actuating the accumulating means in response to the load position-related signal to stop the load at about the detected position in the downstream area of the conveyor, an idler wheel, means for rotatably supporting the idler wheel in engagement with at least one load-carrying roller in proximity to the detected position of the load, the idler wheel being rotated

in response to movement of the load to sense motion of the load, second signal means for producing a load motion-related signal in response to rotation of the idler wheel, the load motion-related signal including a periodic pulse, a series of such periodic pulses corresponding to motion of the load, signal processing means responsive to the load position-related signal for processing the load motion-related signal and for producing a control signal for controlling the operation of the conveyor, the signal processing means including means for counting periodic pulses produced by the second signal means, the counting means including a reset terminal, and means coupling the first signal means to the reset terminal whereby the counting means is reset in response to the load position-related signal, the coupling means including delay timing means for delaying the start of the counting means.

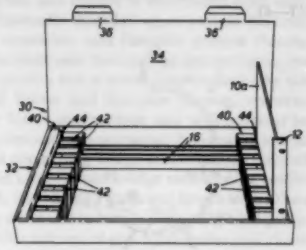
4,461,383
NECKLACE WRAPPER
Horace E. Groff, Box 379, School Rd., Bowmansville, Pa. 17507
Filed Jul. 2, 1982, Ser. No. 394,792
Int. Cl.³ B65D *25/10, 5/50*
U.S. Cl. 206—45.14 **11 Claims**



9. A necklace support, display and storing assembly comprising a necklace box having a base with upstanding side, front and rear walls, means defining a necklace support surface in the box, a roller supported in the box for rotation about a horizontal axis, the roller being located in juxtaposition to the support surface, fastening means on the roller for receivably fastening a portion of a necklace onto the roller, and a necklace fastened on the fastening means, the necklace being wrapped around the roller by rotation of the roller and a portion of the necklace being disposed on the support surface.

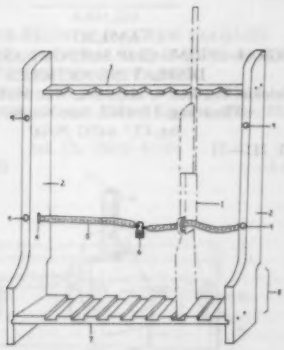
4,461,384
CARD FRAMES
David P. Erlam, Winchester, England, assignor to Rittal-Werk Rudolf Loh GmbH & Co. Kg., Fed. Rep. of Germany
Filed Jun. 25, 1982, Ser. No. 392,160
Claims priority, application United Kingdom, Jun. 29, 1981, 8119941
Int. Cl.³ B65D *69/00, 71/04, 85/30*
U.S. Cl. 206—577 **8 Claims**

1. A packaged card framd kit comprising a pair of side plates, a plurality of cross rails that can be assembled together with the side plates to form at least part of a card frame, and a box capable of housing said side plates and cross rails for transporting said side plates and cross rails, each of said side plates comprising a main body portion, each cross rail adapted to be secured to said main body portions of said side plates when said side plates are in a predetermined upright orientation with said main body portions spaced apart by a predetermined distance, said box including support means for supporting said side plates with said main body portions in a laid flat condition during transport, said support means also including a pair of first receptor means spaced apart by said predetermined distance and adapted to engage portions of said side plates and to support said side plates in said predetermined upright orientation with said main body portions spaced apart by said predetermined distance, said support means further including second receptor means associated with each of said first receptor means, said second receptor means adapted to engage end portions of said cross rails and maintain said cross rails in a predetermined orientation in which said cross rails extend



between said first receptor means during transport, said second receptor means allowing movement of the cross rails between the side plates when the side plates are in said predetermined upright orientation, to allow attachment of the cross rails to the side plates while the side plates are in said upright orientation.

4,461,385
LOCKING GUN RACKS
Roger A. Clouser, 1820 Ohio St., Lawrence, Kans. 66044
Filed Mar. 23, 1981, Ser. No. 246,623
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—4 **10 Claims**



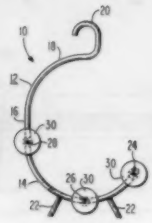
1. A locking gun rack comprising:
a wall-mountable frame having means for receiving stock and barrel portions of guns therein;
slot means disposed in said frame and a passageway which extends through said frame and intersects said slot means;
at least one elongated, flexible gun retaining means removably fitted through or wrapped around narrow portions of guns contained in said rack, having at least one end thereof fitted with a loop means received into said slot means and another end thereof fitted with a locking means which permits removal or securing of said gun retaining means to said guns;
bolt means mounted through said passageway and said loop means and extending into at least one interior stud of an adjacent wall for securing said frame to said wall; and
plug means fitted in said frame for rendering the heads of said bolt means inaccessible when said frame is secured to said wall.

4,461,386

RACK FOR TRANSPORTING RECORDED DISCS

Robert L. Turner, Mooresville, and Robert E. Jennings, Indianapolis, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed May 13, 1981, Ser. No. 263,123
Int. Cl.³ A47G *29/00*
U.S. Cl. 211—41 **5 Claims**



1. A rack for use in cleaning recorded discs comprising

a substantially C-shaped metal rod having a circular bottom portion and a hook at the top portion for supporting the rod,

three sets of posts secured directly to and extending from opposite sides of the circular bottom portion of the rod with the posts in each set being in alignment and all of the posts being parallel to each other, and

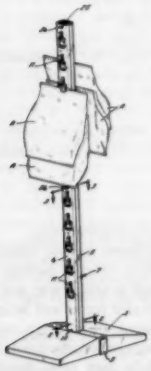
a separate spindle on each of the posts with each of the spindles having a plurality of spaced annular grooves in its outer surface.

4,461,387

INTEGRAL SPRING CLIP SUPPORT ASSEMBLY FOR DISPLAYING ARTICLES

Paul Belokin, Jr., Rte. 4, Hayward, Wis. 54843

Filed Aug. 11, 1982, Ser. No. 407,118
Int. Cl.³ A47G *29/00*
U.S. Cl. 211—71 **4 Claims**



1. An integral spring clip support assembly for displaying articles and comprising, a base, a pair of elongated steel support members each of channel cross-sectional shape and having spaced apart longitudinal edges, the support members arranged back to back with one another and having the longitudinal edges abutting against one another to thereby form a rectangle in cross-section support member,

an opening in said base for the reception of said rectangular support member, a U-shaped plug having a pair of spaced apart upwardly extending free legs, said plug being inserted in said opening in said base for receiving said rectangular in cross-section support member between said opening and said plug to firmly hold said support member in said base; each of said support members having a substantially flat side and a series of integrally formed clips located in spaced apart relationship along the length of each flat side whereby said clips support individual articles for display,

said clips partially punched from said flat sides and each having a free article engaging end and a free finger-operated end, both of said ends being punched free of said flat side,

said clip having an intermediate arcuate portion located intermediate its length, and by which said clip is attached to said flat side, said arcuate portion resiliently urging said engaging end toward said flat side and resiliently biasing said finger operated end away from said flat side,

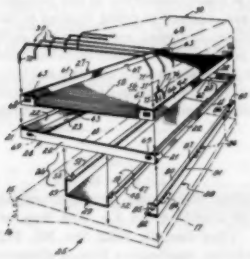
said article engaging end normally biased toward and located in article engaging contact with said flat side and said article engaging end being swingable away from said flat side about and against the bias of said arcuate portion when said finger-operated end is pushed towards said flat side against the bias of said arcuate portion.

4,461,388

SLIP SURFACE SHELF MERCHANDISER

Rafael T. Bustos, Atlanta, Ga., assignor to Leggett & Platt, Incorporated, Carthage, Mo.

Continuation-in-part of Ser. No. 129,342, Mar. 11, 1980, Pat. No. 4,346,806. This application Mar. 25, 1981, Ser. No. 247,346
Int. Cl.³ A47F *1/00*
U.S. Cl. 211—49 D **19 Claims**



1. A merchandiser for converting a shelf having a generally horizontal top surface into a shelf having a downwardly and forwardly sloping top surface, said merchandiser being operable to gravity feed a column of items of merchandise one after another to the front of said shelf as that column's forwardmost item is removed by a customer, said merchandiser comprising,

a generally wedge-shaped frame means,

a stationary low friction slip surface member fixedly secured to said frame means so as to define a downwardly and forwardly sloping top surface on said wedge-shaped frame means,

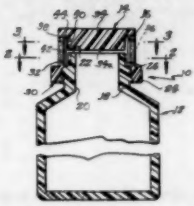
means for securing said frame means onto a horizontal shelf, and

stop means located along the forward edge of said frame means for stopping merchandise displaced on the top of said low friction surface member from sliding forwardly off of said merchandiser.

4,461,389
TAMPER-PROOF CLOSURE AND CONTAINER ARRANGEMENT

Peter Korn, Del Mar, Calif., assignor to Maxwell Laboratories, Inc., San Diego, Calif.

Filed Nov. 2, 1982, Ser. No. 438,602
Int. Cl.³ B65D 41/54
U.S. Cl. 215—246 9 Claims



1. A container and closure cap arrangement comprising a container having a neck portion defining an access opening,

a closure cap having an end portion and a circumferential skirt, said neck portion of said container and said annular skirt being mutually cooperable to enable releasable mounting of said closure cap on said neck portion,

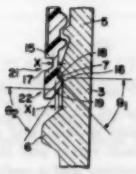
said closure cap and container neck portion having seal receiving surfaces formed thereon such that said three-dimensional surfaces are inaccessible from externally of said closure cap when mounted on said container neck portion,

and a shrinkable ring-like seal member disposed between said closure cap and said container neck portion and being formed against said seal receiving surfaces in relatively tight fitting relation therewith such that relative movement between said closure cap and said container effects deformation of said seal, said closure cap having at least one transparent portion enabling visual observation of said seal member.

4,461,390
TAMPER-EVIDENT PLASTIC CLOSURE

Ernest J. Csaszar, Mountainside, N.J., assignor to General Kap (P.R.) Corporation, Puerto Rico, P.R.

Continuation-in-part of Ser. No. 142,429, Apr. 21, 1980, Pat. No. 4,343,408. This application Jun. 1, 1982, Ser. No. 383,705
Int. Cl.³ B65D 41/34
U.S. Cl. 215—252 34 Claims

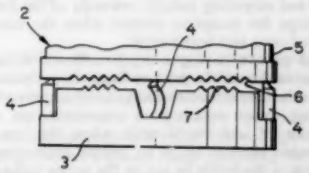


1. A tamper-evident closure for use in connection with a container including a threaded neck portion and an annular collar portion below said threaded neck portion, said closure comprising a one-piece plastic closure body including a horizontal end wall and a cylindrical side wall, said cylindrical side wall including an internally threaded upper portion, a depending lower skirt portion, and an intermediate side wall portion therebetween. said depending lower skirt portion including an inwardly projecting bead adapted to engage said container when said closure is completely threaded onto said container, said intermediate side wall portion of said closure including a frangible portion comprising an area of weakness designed to fracture when said closure is unthreaded from said container after said internally threaded upper portion has been removed from said container, said frangible portion thereby dividing said intermediate side wall portion into an upper intermediate side wall portion and a lower intermediate side wall portion above and below said frangible portion, respectively, said upper and lower intermediate side wall portions having substantially identical crosssectional thicknesses, and said frangible portion comprising bridge means located circumferentially around said closure, said bridge means being sufficiently thin and flexible and having a sufficient length so as to be capable of collapsing when said inwardly projecting bead passes over said annular collar portion of said container as said closure is being threaded onto said container to thereby permit said upper and lower intermediate side wall portions to abut against each other and thereby permit said closure to be applied to said container without fracturing said bridge means, at least a portion of said upper and lower intermediate side wall portions including juxtaposed parallel surfaces to maintain said upper and lower intermediate side wall portions in alignment with each other upon said collapse of said bridge means.

4,461,391
TAMPER-RESISTANT SCREW CLOSURE

Eugene E. Davis, Essex, England, assignor to Johnsen & Jorgensen (Plastics) Limited Company, England

Filed Nov. 26, 1982, Ser. No. 444,742
Claims priority, application United Kingdom, Nov. 30, 1981, 8136095
Int. Cl.³ B65D 41/34
U.S. Cl. 215—252 5 Claims



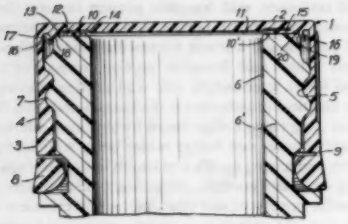
1. A tamper-resistant screw closure for application to a container of the type described in order to close the mouth thereof wherein the closure comprises (a) a cap part with a top and a depending skirt with a lower marginal edge (b) a tamper resistant band with an upper marginal edge below the skirt and provided with internal projecting means to engage with external projecting means on the container to resist upward movement of the tamper resistant band when the closure is unscrewed characterized in that the tamper resistant band is connected to the skirt of the cap part by elongate frangible tongues spaced apart around the closure and arranged to extend substantially vertically relative to the closure and further characterized in that the lower marginal edge of the skirt of the cap part and the upper marginal edge of the band each have a plurality of spaced apart rows of engageable, serrated teeth disposed between adjacent tongues.

4,461,392

THREADED PLASTIC BOTTLE CAP

Vincent N. Conti, West Hempstead, N.Y., assignor to American Safety Closure Corp., Farmingdale, N.Y.

Filed Jun. 22, 1982, Ser. No. 390,803
Int. Cl.³ B65D 53/00
U.S. Cl. 215—270 **7 Claims**



1. An improved bottle cap for use with a bottle having a threaded neck opening into the bottle, said cap being constructed of flexible plastic material and having a top wall, a cylindrical side wall depending from the top wall and a thread on the inner surface of the side wall for cooperating with the thread on the neck of the bottle, the improvement comprising:

(a) a primary annular sealing flange extending downwardly from the top wall of the cap in a radial inward direction for engagement with the top wall surface of the bottle neck as aligned directly therebelow when the cap is threaded onto the bottle neck, said primary sealing flange:

(1) being biased in an upwardly direction by contact with the top wall surface of the bottle neck when the cap is fully threaded onto the bottle neck,

(2) having a radial length sufficient to cover a major portion of the surface area of said top wall surface and span surface irregularities therein, and

(3) being sufficiently flexible to accommodate such surface irregularites and maintain sealing contact with the top wall surface in a direction extending completely around said bottle neck; and

(b) an annular groove in the inner surface of the top wall of the cap axially aligned directly above the primary sealing flange and extending radially inwardly of the free end of the flange for reception thereof when the cap is fully threaded onto said bottle neck,

(1) said groove having a depth sufficient to leave the upper surface of the primary flange free of contact with any other cap structure and to leave a space above said sealing flange which is in communication with the interior of said bottle neck when the cap is fully threaded thereon so as to permit pressurized atmosphere in the bottle to act on the upper surface of said sealing flange to press it against the top wall surface of the bottle neck.

4,461,393

CLOSURE CAP

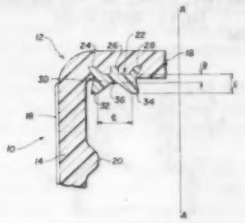
Herbert V. Dutt, Sarasota, Fla., assignor to Sun Coast Plastics, Inc., Sarasota, Fla.

Filed Apr. 15, 1983, Ser. No. 485,533
Int. Cl.³ B65D 53/00
U.S. Cl. 215—329 **9 Claims**

1. A closure cap for containers, comprising:

a substantially rigid outer closure member defining a longitudinal axis and having a transverse top wall and an annular side wall depending from the perimeter of said transverse top wall and integrally formed therewith and defining an open end thereof; and

a resilient inner sealing member secured to the transverse top wall of the outer closure member, said inner sealing member including a base portion from which a pair of transversely spaced apart flanges extend, said base portion defining a first longitudinal thickness and a second longitudinal thickness with each of said flanges, wherein:



(i) the first longitudinal thickness is not greater than approximately 50% of the transverse distance between the flanges; and

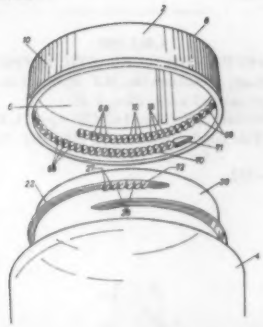
(ii) the first longitudinal thickness is no greater than approximately 65% of the second longitudinal thickness.

4,461,394

CLOSURE CAP AND CONTAINER

Uwe Sendel, and Karl Nofer, both of Kitchener, Canada, assignors to Pano Cap (Canada) Limited, Kitchener, Canada

Continuation-in-part of Ser. No. 088,515, Oct. 26, 1979, abandoned. This application Oct. 21, 1982, Ser. No. 435,686
Int. Cl.³ B65D 41/04
U.S. Cl. 215—330 **9 Claims**



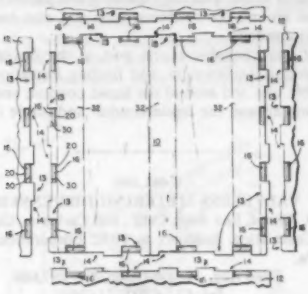
1. A closure cap for use with a corresponding container having a neck surrounding an opening, said neck having a screw thread on its outer surface, said screw thread of the container having alternate ridges and indentations, said cap comprising a central portion and a periphery with a flange extending from the periphery for contacting said container, said flange having a series of rounded projections on its inner surface, said projections being located adjacent to one another and overlapping slightly with one another to form a screw thread having a series of similar alternate rounded ridges and adjacent indentations, the screw thread of the cap containing sufficient alternate ridges and indentations so that when the cap and container are in a closed position, at least one ridge on one screw thread can engage an indentation on another screw thread.

4,461,395

REUSABLE, MODULAR, KNOCKDOWN CONTAINER

Robert A. Burnett, 1530 Eastlake Ave. E., Seattle, Wash. 98102

Filed Jul. 20, 1981, Ser. No. 284,983
Int. Cl.³ B65D 8/14
U.S. Cl. 217—12 R 12 Claims



1. A reusable, modular, knockdown container having interchangeable panels, comprising:

(a) a plurality of interchangeable panels, each panel having

(i) notched edges including recessed steps capable of interfitting with adjacent panels to form a geometric solid,

(ii) at least one clip-receiving recess on each edge of a panel capable of aligning with a respective recess on an adjacent panel in the solid and capable of receiving a clip recessed into the outer surfaces of adjacent panels, and

(iii) a clip-retaining trough intersecting and associated with each clip-receiving recess and providing a bearing surface for holding a clip;

(b) a resilient clip for each pair of clip-receiving recesses on adjacent panels, having

(i) opposed tabs to bear against respective clip-retaining troughs on adjacent panels, and

(ii) connecting means between the tabs resiliently holding the tabs, providing bearing force for the tabs, and capable of overlying the clip-receiving recess at a height which is, at most, flush with the surface of the panel; and

(c) a clip-bearing plate associated with each clip-retaining trough to protect the corner between the recess and trough during placement and removal of the clip, wherein the clip-bearing plate is a metal angle which overlies the corner between the recess and trough, with a longer arm over the surface of the recess and a shorter arm over the bearing surface of the trough.

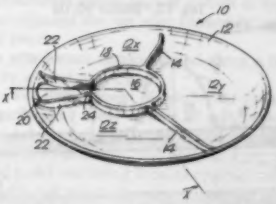
4,461,396

COMBINED PLATES AND GLASS HOLDERS

James B. Harper, Warwick, England, assignor to Harford Overseas Limited, Gibralter

Filed Dec. 15, 1982, Ser. No. 450,159
Claims priority, application United Kingdom, Oct. 7, 1982, 8228757
Int. Cl.³ A47G 19/03, 19/06
U.S. Cl. 220—23.83 6 Claims

1. A combined plate and glass holder comprising integrally formed support means including a planar portion having a peripheral margin surrounding a first area for use as a plate and a second area at least partially surrounded by said first area for use as a glass holder, the first and second areas being defined by location-defining means which is at least partially in the form of structure extending upwardly from said planar portion about at least part of the periphery of the second area to provide lateral support for a glass positioned on said second area, a single hole through the support means inwardly of the peripheral margin with one opposed edge of the hole being located adjacent to the peripheral margin and the other edge adjacent the second area; whereby, in use, a thumb of a hand



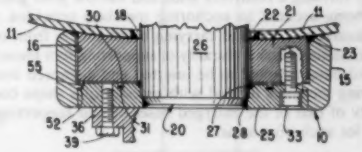
extends over said edge of the hole to press against a glass placed on the second area, with the back of the thumb pressing against said opposed edge of the hole to provide stability and all of the fingers of the hand pressing against the first area from underneath to provide further stability.

4,461,397

PROTECTIVE DEVICE FOR MOBILE TANKS HAVING BOTTOM DISCONTINUITIES

Ralph G. Portis, Highland Park, Ill., assignor to Midland Manufacturing Corp., Skokie, Ill.

Filed Feb. 23, 1981, Ser. No. 236,826
Int. Cl.³ F16P 1/00
U.S. Cl. 220—85 P 1 Claim

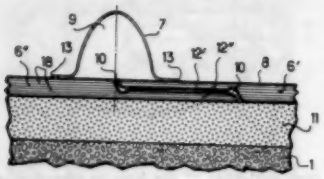


1. A protective device for a mobile tank having a bottom discontinuity projecting therefrom and being susceptible in an accident to impact damage that could permit release of tank contents, the combination comprising a first flange encircling the bottom discontinuity and being disposed against the tank and secured thereto, a second flange encircling the discontinuity and being disposed against said first flange, means for fastening said first flange to said second flange, said second flange having a circumferentially extending recess therein open toward said first flange, a protective device including a central portion having a central opening therein in which said first and second flanges are located, said central portion having a rib that projects inwardly into said central opening and substantially matches the shape of said recess and is located therein, said protective device further including a plate portion having a surface disposed away from the tank and tapering toward the tank forwardly and rearwardly of the tank from said central opening on slopes which terminate in spaced relation with the tank, said plate at the terminations of said slopes being continuously curved toward the tank on convex curves to define a curved undercut periphery free of any corner facing the tank, whereby in consequence of severe impact on the protective device, the tank deforms around a portion of the curved undercut periphery, the deformation being of such shape and magnitude that rupture of the tank is avoided.

4,461,398
STORAGE TANK FOR CRYOGENIC LIQUEFIED GASES SUCH IN PARTICULAR AS HYDROGEN

Gilles Argy, La Queue les Yvelynes, France, assignor to Technigaz, France

Filed Feb. 19, 1982, Ser. No. 349,991
Claims priority, application France, Feb. 20, 1981, 81 03447
Int. Cl.³ B65D *90/04*
U.S. Cl. 220—422 **9 Claims**

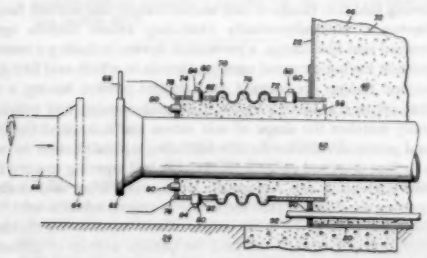


1. A storage tank for cryogenic liquefied gases such as, in particular, liquid hydrogen, comprising an outer shell, an inner fluid-tight shell defining a storage space containing said liquefied gas and an insulating structure provided in the intermediate space left therebetween and evacuated, said inner shell being defined by juxtaposed hollow and evacuated panels meeting along joints, and by shrinkage take up elements covering in fluid-tight relationship said joints between said adjacent panels, wherein the improvement consists in that said panels have a generally parallelepipedic shape formed with a peripheral edge flange lying in the plane of the panel in extension of a flat side thereof and having a thickness less than one half of the panel thickness, any two adjacent panels being juxtaposed in overlapping relationship of their peripheral edge flanges thereby forming a relatively wide and narrow joint gap, each panel being secured to anchoring members provided on an outer insulating layer and carrying on its side in front of said outer insulating layer a plurality of supporting foot pieces with enlarged bases adapted to be inserted and anchored into said anchoring members formed with recesses of a shape complementary of that of the enlarged bases of said supporting foot pieces for anchoring same.

4,461,399
LIQUID STORAGE TANK CONDUIT CONNECTION

Stanley E. Sattelberg, Naperville, and George A. Baker, Batavia, both of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed May 27, 1982, Ser. No. 382,347
Int. Cl.³ B65D *90/06*
U.S. Cl. 220—444 **7 Claims**



1. A liquid storage tank for storing a liquid at a temperature substantially above or below atmospheric temperature comprising:

a primary liquid containment vessel capable of storing liquid;

an outer vessel spaced outwardly from and surrounding a substantial portion of the primary vessel;

a liquid conduit communicating with and joined to the primary liquid containment vessel and extending through an oversized hole in the outer vessel;

a flexible expansion and contraction unit surrounding the liquid conduit, in spaced apart arrangement, exterior of the outer vessel with the expansion unit joined to the outer vessel around the oversized hole and also joined to the liquid conduit;

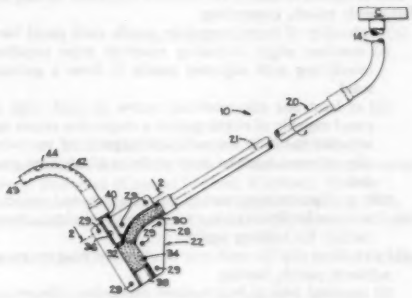
at least one closeable access port in the flexible unit for inspecting insulation in, and feeding insulation into, the flexible unit and around the liquid conduit; and

insulation around the liquid conduit and inside the flexible unit.

4,461,400
VALVELESS METERING DISPENSER

Dennis D. Kempf, San Jose, Calif., and Carlos A. Cordero, San José, Costa Rica, assignors to FMC Corporation, Philadelphia, Pa.

Filed Aug. 31, 1981, Ser. No. 297,606
Int. Cl.³ G01F *11/26*
U.S. Cl. 222—1 **20 Claims**



1. A valveless metering dispenser for gravitationally dispensing a measured volume of granular material from an elevated container adapted to receive a supply of granular material comprising: conduit means connected at one end to said container and including a tubular wand; means defining a measuring chamber; means defining a discharge chute having a discharge opening; each of said wand, measuring chamber and discharge chute having a longitudinal axis; and means including a valveless junction interconnecting said wand, said measuring chamber and said discharge chute in flow communication, with the axes thereof in a common plane, wherein, by an operator of the dispenser swinging said wand between first and second positions while maintaining said common plane generally vertical, said measuring chamber is lower than said discharge chute in said first position and is filled with granular material flowing from said wand and past said junction, and is above said discharge chute in said second position and gravitationally discharges its measured volume of granular material past said junction and into said discharge chute while precluding the flow of granular material from said wand.

4,461,401
LIQUID DISPENSER ASSEMBLY

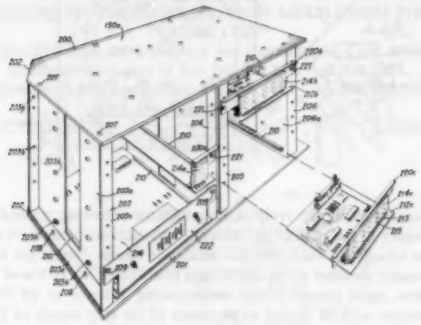
Bolling H. Sasnett, Jr., 80 Forrest Lake Dr., NW., Atlanta, Ga. 30327

Filed Jul. 20, 1981, Ser. No. 285,147
Int. Cl.³ B67D *5/22*
U.S. Cl. 222—27 **15 Claims**

1. A liquid dispensing assembly of the type having a housing, a hydraulic system within said housing for pumping liquid to dispense therefrom, an electrical display means for displaying

visually the volume of liquid dispensed by said hydraulic system and displaying visually the computed price of the delivered liquid, an electronic computer means for receiving information from said hydraulic system and for progressively calculating the computed price of the liquid being delivered and for providing progress signals to said display means for generating the display of said calculated price of the delivered liquid, and circuits interconnecting said computer and said display means, the improvement comprising:

said housing having an electronic receiving compartment, a plurality of modules disposed within said electronic receiving compartment, each of said modules having an



open fronts and opposed generally horizontally disposed runners in said modules, slideable removeable cards received by their edge portions by said runners, said cards having portions of said circuits thereon, the outer end of said cards terminating adjacent to the open front of its associated module, said display means including electronic visual displays respectively on the ends of said cards, said displays being disposed in the upright positions adjacent to the open fronts of said modules when said displays are received by said runners within said modules, said displays being electrically connected to said cards and window means for closing said electronic receiving compartment and through which said displays are viewed.

4,461,402

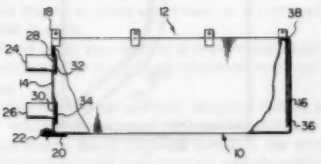
CONTAINER LINER

Donald R. Fell, Stoney Creek, and Seiji Takeuchi, Burlington, both of Canada, assignors to Don Fell Limited and Lawrence Fell Limited, both of Hamilton, Canada

Filed Apr. 1, 1983, Ser. No. 481,170

Int. Cl.³ B65D *33/02, 33/14, 33/38, 90/04*

U.S. Cl. 222—105 **11 Claims**



1. A disposable liner for use with a rigid container adapted to be pneumatically filled with a flowable material, said liner comprising:

(a) a tube of thin sheet plastics material forming left and right side panels and top and bottom panels;

(b) vertically extending front and back end panels being formed by folding and joining end flaps of said tube to provide top, bottom and side edges at the junction of said top and bottom and left and right side panels with said front and back end panels;

(c) inlet and outlet ports located in said back end panel, said ports being comprised of tubes of reinforced plastics sheet material, each attached at one end to said back end panel around an aperture located therein;

(d) hook attachment means located at least at top corners of said liner adjacent the top edge formed by said front and rear end panels;

(e) bottom attachment means located along a bottom edge formed by an end panel; and

(f) a protective flap element of reinforced plastics material for protecting the inner surface of said front end panel, said flap element being attached to said liner along the top edge formed by said front end panel to hang adjacent the front end panel and being located opposite said inlet port in the back end panel whereby to protect the front end panel from abrasion when the liner is filled with abrasive flowable material projected pneumatically into the liner through said inlet port towards said front end panel.

4,461,403

STRIPING DISPENSER

Harald Prahs, Hamburg-Wentorf, Fed. Rep. of Germany, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 10, 1981, Ser. No. 329,170

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1980, 8033450

Int. Cl.³ B67D *5/56*

U.S. Cl. 222—129 **4 Claims**

1. A dispenser for extruding a major portion of a first pasty material and a minor portion of a second pasty material which comprises

an elongated tubular container forming a first product containing chamber opened at one end to receive a product dispensing piston and closed at the other end with a delivery head including a product delivery channel arranged parallel to the longitudinal axis of the dispenser and communicating the contents of the first product containing chamber to a discharge port, said delivery head also includes a second product containing chamber which is open at one end to the first product containing chamber and which has a connecting orifice which connects the second product containing chamber to the product delivery channel, and means adapted to accept a piston drawing means,

said product dispensing piston transversely disposed in the elongated tubular container including a stop means to restrain downward motion of the piston, and

said piston drawing means including a shaft adapted to en-

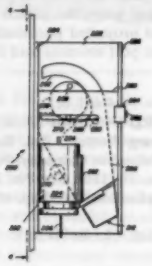
gage the piston stop means and an actuator to impart reciprocal motion to the shaft, and said second product containing chamber is displaced towards the periphery of the dispensing end to partially surround said piston drawing means.

4,461,404

APPARATUS FOR MOVING AN ADHESIVE APPLICATOR

Richard C. Baughman, Geneseo, and David S. Bump, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 24, 1982, Ser. No. 380,964
Int. Cl.³ B05B *15/02*
U.S. Cl. 222—148 **4 Claims**



1. In an adhesive dispensing apparatus, the improvement comprising:

a pivotally mounted cam plate having a cam surface;

a cam member engageable with the cam surface of the cam plate;

drive means for moving the cam member relative to the cam surface to effect pivotal movement of the cam plate;

a sump carried by the cam plate and movable with the plate between a first position and a second position;

an adhesive applicator having a nozzle; and

a carrier for the adhesive applicator, the carrier being coupled to the cam member so that movement of the cam member effects movement of the carrier and the applicator to locate the applicator nozzle in the sump when the sump is in its first position and to locate the nozzle out of the sump and in a position for dispensing adhesive when the sump is in its second position.

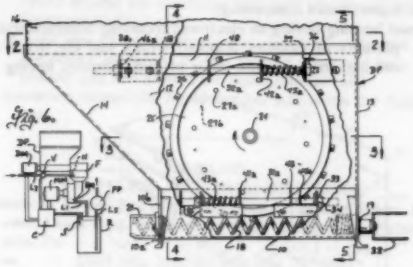
4,461,405

APPARATUS FOR DISPENSING DRY POWDERED MATERIAL

Lee E. Adamson, Roscoe, Ill., assignor to Taylor Freezer Company, Rockton, Ill.

Filed Dec. 13, 1982, Ser. No. 449,522
Int. Cl.³ B65G *65/44*
U.S. Cl. 222—201 **12 Claims**

1. An apparatus for dispensing dry powdered material comprising, a hopper having a trough along its bottom and a dispensing outlet adjacent one end of the trough, feed auger means extending along the trough and supported for axial rotation on the hopper for feeding material to said outlet, an agitator wheel rotatably mounted on the hopper in an upright plane through the axis of the auger and having means engaging the auger for rotating the wheel in one direction when the auger is rotated, the wheel having a set of actuator members angularly spaced apart in a circular pattern about the axis of the wheel, at least one reciprocating agitator slidably mounted on the hopper for lengthwise reciprocation along a path generally paralleling the auger, stop means on the reciprocating agitator and hopper engageable to stop movement of the reciprocating agitator in one direction at a first position, spring means resiliently urging the reciprocating agitator in said one direction to said first position, abutment means on the reciprocating agitator at a location to be engaged by the actuator members during their movement through a preselected arc of travel for moving the reciprocating agitators in a direction opposite said one direction, the path of movement of the abutment means on the reciprocating agitator extending generally tangent to the path of movement of the actuator members on the wheel and such that the abutment means disengages the actuator member at the end of said preselected arc of travel to allow rapid return of the reciprocating agitator to its first position with an impact engagement of the stop means on the agitator and hopper.

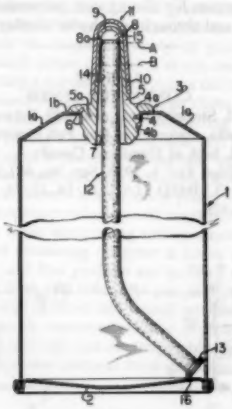


4,461,406

CONTAINER WITH RECIPROCABLE DISPENSING TUBE

Osvaldo Vannucci, Sao Paulo, Brazil, assignor to American Home Products Corporation, New York, N.Y.

Filed Jun. 11, 1982, Ser. No. 387,391
Claims priority, application Brazil, Dec. 2, 1981, 8107847
Int. Cl.³ B65D *37/00*; B67D *5/60*
U.S. Cl. 222—211 **4 Claims**



1. In a dispensing container for liquids, having a reservoir and a one-piece exit nozzle which is an outwardly extending tube with an outwardly diminishing tapered bore, and provided with a closure at the outer end, the improvement comprising a resilient delivery tube in a resiliently bent position within the reservoir, a first end of said delivery tube abutting an internal surface of the reservoir and a second end of said delivery tube extending into the tapered bore of the exit nozzle

and abutting the closure thereof, the length of said delivery tube being greater than the distance between the points of abutment so that said tube is held in a flexed condition whereby upon removal of the closure from the nozzle the resiliency of said delivery tube forces said second end to protrude outwardly from the nozzle; and an enlarged portion defined on said delivery tube adjacent said first end whereby when said delivery tube is pulled outwardly from the reservoir, said enlarged portion engages the internal surface of the tapered bore forming a seal therebetween.

4,461,407

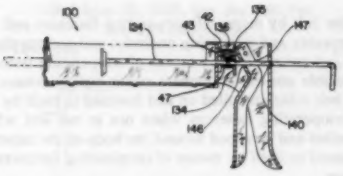
AUTOMATIC PRESSURE RELEASE MECHANISM FOR CAULK GUN

Danny Finnegan, 6840 Hickory Ave., Orangevale, Calif. 95662

Continuation-in-part of Ser. No. 252,858, Apr. 10, 1981, abandoned. This application Aug. 14, 1981, Ser. No. 292,996

Int. Cl.³ B67D *5/42*

U.S. Cl. 222—391 **5 Claims**



1. In a caulking gun comprising:

(a) a housing for holding a caulking tube, said housing having a rear wall and an intermediate wall,

(b) a piston rod having a piston at one end thereof for driving caulk compound from a tube of caulk,

(c) a handle secured to said housing,

(d) a trigger pivotally mounted to said handle for rotation about a pivot member,

(e) a driving dog means cooperating with said trigger and said rod for forwardly driving said rod a finite distance each time the trigger is rotated in a counterclockwise direction,

the improvement comprising:

(a) a deformable resilient pressure release means having a central bore therein, aligned with the path of travel of said rod and being adapted for engagement by said rod during forward travel,

(b) said pressure release means being moveable from a first relaxed position to a compressed deformed position upon engagement of said rod therewith,

(c) said release means also being adapted upon cessation of the forwardly driving of said rod, and clockwise rotation of said trigger to relax and return to the relaxed uncompressed position,

(d) said rod being moveable to a position opposite its initial direction of travel upon decompression of said release means,

(e) a spring carried by said rod, disposed behind said pressure release means, said deformable resilient pressure release means being disposed between the intermediate wall of said housing and the rear wall thereof and being compressed by the impingement of the spring therefrom upon trigger rotation, said pressure release means, and said spring cooperating to urge the driving dog means rearwardly to reset same into its at rest position and rendering it available for cooperation with said trigger by tensing the spring against said dog,

said release means releasably gripping said rod and moving forwardly with said rod upon relaxation of said spring after reset of said dog means.

4,461,408

DISPENSER

John S. Shepard, 1304 S. Shields, Ft. Collins, Colo. 80522

Filed Jun. 8, 1982, Ser. No. 386,250

Int. Cl.³ B65D *5/72*

U.S. Cl. 222—501 **4 Claims**

1. For use with a container of glue that enables pressurized outflow of said glue from the container, said container having an upstanding neck threaded to receive a dispenser, a dispenser comprising:

a cap for said neck that includes a cylindrical sidewall formed to define threads matable with the threads on said neck;

an annular top wall projecting integrally inward from the upper perimeter of said sidewall;

a generally-conical hollow snout projecting integrally upward from the inner periphery of said annular wall and terminating in a margin that defines an upwardly-facing opening, the inward surface of said margin being shaped to define a valve seat;

means projecting integrally inward from said seat to define a guideway;

an elongated rod slidable within said guideway, the upper end portion of said rod being shaped to define a valve sealingly engagable with said seat;

a ring encircling the lower end portion of said rod, having an external diameter enabling sliding reception of said ring within said sidewall and an internal diameter essentially no less than the diameter of said inner periphery, whereby said ring is seatable against said top wall;

and a plurality of resilient webs circumferentially distributed and spaced apart in a normal plane when unstressed and integrally extending between said ring and said rod, each of said webs generally defining a partial spiral, when the combination of the rod and ring is assembled onto the container, the resilient webs are then stressed into a bowed configuration, and that bowing exerts a force on the rod that urges the valve of the rod against the valve seat of the snout.

4,461,409

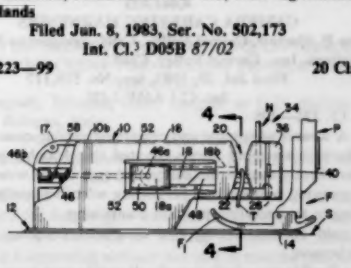
SEWING MACHINE NEEDLE THREADER

Arnoldus Biemans, Mathenesserlaan 432, 3023 Hg Rotterdam, Netherlands

Filed Jun. 8, 1983, Ser. No. 502,173

Int. Cl.³ D05B *87/02*

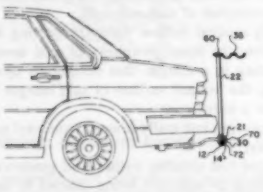
U.S. Cl. 223—99 **20 Claims**



1. A needle threading device for a sewing machine having a sewing surface, vertically positionable foot pad means above

said surface, and a vertically reciprocable sewing needle having a pointed lower end and an eye adjacent said end comprising, housing means, first thread pusher means supported in said housing means for displacement along a first path between retracted and extended positions relative to said housing means, means on said housing means engageable with said needle to position said eye in alignment with said first path for said first pusher means to extend through said eye from one side of said needle to the other when said first pusher means is displaced from said retracted to said extended position thereof, second thread pusher means supported in said housing means for displacement along a second path between retracted and extended positions relative to said housing means, said second path extending laterally of said first path and being on said other side of said needle, and means to displace each said first and second thread pusher means between said retracted and extended positions thereof.

4,461,410
AUTOMOBILE BICYCLE CARRYING RACK
Paul Tartaglia, 12414 Veronica Cir., Dallas, Tex. 75234
Filed Jan. 4, 1982, Ser. No. 336,947
Int. Cl.³ B60R *9/10*
U.S. Cl. 224—42.03 B **1 Claim**



1. A bicycle carrier rack for attachment to a trailer hitch mounted on an automotibe vehicle, said trailer hitch comprising a tongue with a hole there through, the improvement comprising: said carrier rack having a single vertically oriented post member and an upper horizontally oriented cross member attached to the upper end of said post member, said cross member having a pair of hook members extending therefrom for receiving a bicycle, said post member having a post plate attached to the lower end thereof, said post plate having a pair of slotted holes and a threaded rod extending therefrom for insertion through said tongue hole, a support plate having a central hole adapted to receive the threaded rod and a pair of slotted holes corresponding to the slotted holes in the post plate, threaded bolts to pass through the slotted holes for securing the plates together with the tongue there between and a nut to be threadably received on the rod member.

4,461,411
CAMERA CARRYING HARNESSES
Nettie P. Harrow, Carmel Valley, Calif., assignor to Pena Productions, Inc., Carmel Valley, Calif.
Filed Jul. 28, 1983, Ser. No. 518,117
Int. Cl.³ A45F *5/00*
U.S. Cl. 224—208 **9 Claims**

1. A wearer adjustable and camera adjustable camera carrying harness assembly means adapted to releasably position a camera firmly against the abdominal area of the wearer when in a carrying position and permitting selective eye level positioning in an operating position comprising:

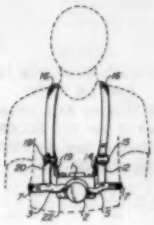
a. said camera having two apertured coupling elements thereon;

b. a flexible non-elastic length adjustable neck strap with two ends each having a ring and a hook for attachment of the hooks to the said apertured coupling elements of the camera;

c. a flexible non-elastic length adjustable releasable belt extending around the waist of the wearer;

d. two flexible non-elastic length adjustable harness straps each having two ends, the first end of each being rigidly and unreleasably connected to the belt and the second end of each being releasably connected to the neck strap;

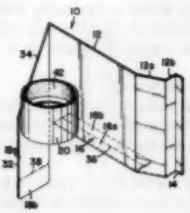
e. a flexible non-elastic length adjustable and removable camera cradle which removably and adjustably attaches



to the belt by means of cooperating fasteners and which removably and adjustably encircles and secures the camera and camera lens by means of cooperating fasteners;

f. a flexible non-elastic camera cover rigidly connected to the belt which is rolled up and fastened to itself by means of cooperating fasteners when not in use and which is unrolled and wrapped around the body of the camera and fastened to itself by means of cooperating fasteners when in use.

4,461,412
CONTAINER AND MANUAL HOLDER
Robert Langland, R.R. #1, Bingham Lake, Minn. 56118
Filed Dec. 20, 1982, Ser. No. 451,271
Int. Cl.³ B60R *7/04*
U.S. Cl. 224—273 **14 Claims**



1. A document and cylindrical receptacle holder apparatus for mounting in the cab of a tractor along the left-hand wall and seat pedestal wall near the floor of the tractor cab, said holder apparatus comprising:

(a) a first sheet of material bent to form a front support wall substantially parallel to but offset from a side wall, a back support wall perpendicular to said side wall, and a bottom support wall, perpendicular to said side wall, said side wall having front and back ends and being offset from the left-hand wall of the tractor, said front wall being adjacent said front end of said side wall, said back wall being adjacent said back end of said side wall, said bottom wall being adjacent the bottom edge of said side wall, said side wall and said bottom wall cooperating with the left-hand wall of the tractor to form a compartment adapted for the receipt of a document such as an operator's manual, said back support wall including a portion extending beyond the bottom of said side wall, said front and back support walls cooperating to retain the holder apparatus in posi-

tion, said front support wall being adapted for insertion behind the tractor molding along the left-hand wall and said back support wall being adapted for insertion behind the floor molding along the tractor seat pedestal; and

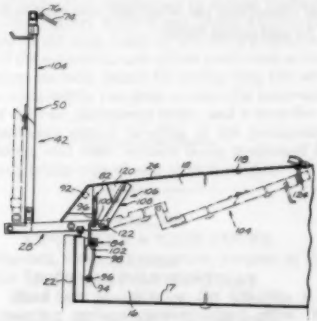
(b) a hollow, open cylindrical member interconnected to said side and back walls above the bottom of said back wall, said cylindrical member being adapted for the receipt of a cylindrical receptacle, said cylindrical member cooperating with the floor of the cab to retain the cylindrical receptacle.

4,461,413

RETRACTABLE, ARTICULATED CARRIER FOR VEHICLES

Griffith L. Hoerner, 2211 Montana Ave., Santa Monica, Calif. 90403

Filed May 18, 1983, Ser. No. 495,749
Int. Cl.³ B60R 9/06
U.S. Cl. 224—311 **17 Claims**



1. A load carrier for use with a vehicle having a cavity defined by interior surfaces of contiguous wall members and by a closure having an undersurface for closing an opening in said vehicle which provides access to said cavity and which is defined by free edges of said wall members, said closure being hingedly connected to said vehicle along one side of said closure and of said cavity, said load carrier comprising:

a base frame having a first and a second end and, when said load carrier is in its load-supporting position, extending generally horizontally across and supported by said free edges of said wall members distal from said one side of said closure to overhand both sides of said free edges so that said first and second ends of said base frame extend into, and away from, said cavity, respectively, said base frame comprising rigid members;

load-supporting means connected to said second end of said base frame in a generally upright position when said load carrier is in said load-supporting position;

anchoring means connected to said first end of said base frame and to at least one said interior surface of said wall members or to said undersurface of said closure for anchoring said carrier to said vehicle; and

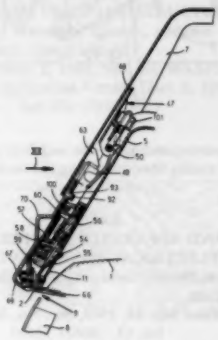
locking means carried on said vehicle for locking said closure against said free edges of said wall members to close said opening when said load carrier is not in said load-supporting position and for locking said closure against said base frame when said load carrier is in said load-supporting position.

4,461,414

AUTOMATIC SELF-LOCKING ROOF RACK

Günter Gieber, Defreggerstr. 6, A-3300 Amstetten, Austria

Filed May 18, 1983, Ser. No. 495,760
Claims priority, application Austria, May 18, 1982, 1956/82
Int. Cl.³ B60R 9/04
U.S. Cl. 224—315 **16 Claims**



1. In a roof rack securable to the rain gutters of a motor-vehicle roof above the door openings, a leg subassembly comprising:

a support;

a leg standing in the gutter above the respective door opening and carrying the support;

means on the leg for securing same on the respective gutter;

a holddown member pivoted on the support and displaceable between a locking position close to same for securing an object to the support and a freeing position spaced from the support;

a locking element extending into the respective door opening underneath the leg and vertically displaceable relative thereto between an upper position relatively close underneath the respective gutter and a lower position spaced downward therefrom, whereby the locking element can only move into the respective lower position when the respective door is not closed in the respective door opening; and

latch means including formations engageable in the upper position of the locking element and connected to the holddown member for preventing displacement of same into the freeing position except when the locking element is in the lower position.

4,461,415

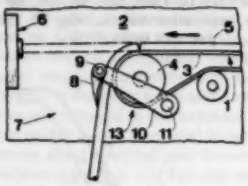
DEVICE FOR BREAKING AT LEAST ONE CONTINUOUS ROD IN A MACHINE FOR MAKING PRODUCTS FOR SMOKERS

Enzo Seragnoli, Bologna, Italy, assignor to G.D. Società per Azioni, Bologna, Italy

Filed Jul. 27, 1982, Ser. No. 402,800
Claims priority, application Italy, Oct. 8, 1981, 49454 A/81
Int. Cl.³ A24C 5/31
U.S. Cl. 225—98 **4 Claims**

1. Device for breaking at least one continuous rod moved along a path in a machine for making products for smokers, comprising a separating element movable across the path of the said rod from a first to a second position, and wherein there are operating means of an elastic type for displacing the said separating element alternately from the said first to the said second position, and from the said second to the said first position,

automatic means for loading the said operating means of an elastic type, means for restraining the said separating element



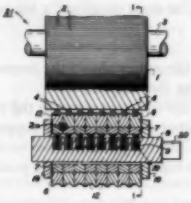
in positions corresponding to the said first and the said second position, and means for controlling the said means of restraint.

4,461,416

METHOD AND APPARATUS FOR FEEDING LENGTHS OF ELECTRICAL WIRE AND THE LIKE

Ernest L. Cheh, Darien, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Filed Sep. 24, 1981, Ser. No. 305,316
Int. Cl.³ B65H *51/10*
U.S. Cl. 226—1 **10 Claims**



10. Method of feeding a plurality of lengths of material such as wire and the like comprising:

(a) engaging a portion of each length of material between a feed roller means and a pressure roller means,

(b) imparting a feeding force to the plurality of lengths of material by the feed roller means,

(c) continuously maintaining a portion of the pressure roller means against each length of material, and

(d) automatically adjusting the force placed by the pressure roller means against each length of material by biasing the pressure roller means towards the feed roller means from within so that the force on each length of material is maintained in a predetermined range.

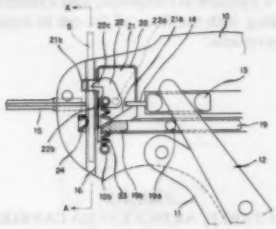
4,461,417

TAG ATTACHER

Akira Furutsu, Tokyo, Japan, assignor to Japan Bano'k Co., Ltd., Tokyo, Japan and Ben Clements & Sons, Inc., South Hackensack, N.J.

Filed Dec. 9, 1981, Ser. No. 329,090
Claims priority, application Japan, Dec. 19, 1980, 55-178799
Int. Cl.³ B65C *7/00*
U.S. Cl. 227—67 **3 Claims**

1. A tag attacher for dispensing tag pins from a tag pin assembly, said tag pin assembly being molded integrally in the shape of a comb from a synthetic resin, and said assembly including a plurality of tag pins joined at one end of each thereof to a connecting bar having side surfaces, each of said tag pins including a head portion, a lateral rod, and a filament connecting said head portion and said lateral rod together, comprising a tag attacher body having a connecting bar guide portion in which said connecting bar is guided, a side-slitted hollow needle supported on said body, a lever for forcing said lateral rods into said needle, a cam plate provided proximate said connecting bar guide portion of said tag attacher body, said cam plate being adapted to be moved upwardly when said lever is drawn inwardly, and downwardly when said lever is released, spring means for applying a resilient force to said cam plate to move said cam plate downwardly, and a stationary



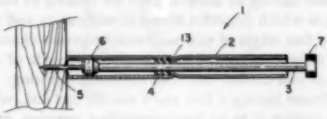
claw and a movable claw supported on said cam plate, said stationary claw and said movable claw being adapted to hold firmly therebetween both side surfaces of said connecting bar, said movable claw being adapted to slide on the surface of said connecting bar when said cam plate is upwardly moved, and feed said connecting bar when said cam plate is downwardly moved by said spring means.

4,461,418

FASTENER DRIVING TOOL

Jeffrey T. Schaefer, Rte. 4,, Waupaca, Wis. 54981

Filed Nov. 27, 1981, Ser. No. 325,544
Int. Cl.³ B25C *1/02*
U.S. Cl. 227—147 **4 Claims**



1. A fastener driving tool of the type having a round tubular grip and a ram which is drivable within the grip and comprising; a unitary construction characterized by;

(1) an elongate circular tubular grip having a nail end and a blow end and having at least one integral detent projecting inward along the midsection of the grip,

(2) an elongate cylindrical ram having a diameter smaller than the inside diameter of the grip and the ram being terminated at one end by an integral cylindrical nail contact end of a diameter providing a sliding fit with the inside diameter of the grip and the ram being terminated at the other end by an integral blow receiving end having a diameter larger than the inside diameter of the grip, and

(3) a sleeve member which is engaged with the inside of the grip between the nail end of the grip and the detent and the sleeve serves to maintain frictional engagement between the ram and grip in a unitary construction.

4,461,419

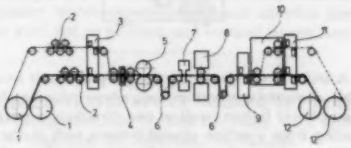
AUXILIARY APPARATUS FOR MANUFACTURING STRIPS AND SHEETS, COATED ON ONE SIDE WITH A PROTECTIVE COATING

Bolesław Mitka, Katowice; Tadeusz Prajsnar, Gliwice; Karol Mniszek, Zabrze; Wilhelm Gorecki, Gliwice; Franciszek E. Kolodziejczyk, Tarnowskie Gory; Jan Madry; Ryszard Kielpi/ ski, both of Katowice; Boguslaw Górecki, Myslowice; Kazimierz Kucharski, Katowice; Edmund Richta, and Jan Maciejewski, both of / wietochlowice, all of Poland, assignors to Instytut Metalurgii Zelaza IM. Stanisława Staszica, Gliwice, Poland

Filed Jun. 23, 1981, Ser. No. 276,461

Int. Cl.³ B23K *37/00*

U.S. Cl. 228—5.1 **2 Claims**



1. An auxiliary apparatus for the production of one side coated steel sheet with a coating, selected from the group consisting of protective, decorative or special coatings, comprising uncoilers, shears, welders and coilers wherein the material flow line of the strip between uncoilers positioned at the beginning of the apparatus, and coilers positioned at the end of the installation, includes means for juxtaposing two strips in a face to face relationship, two seam welders for seam welding of the sides of the two juxtaposed strips, and a stretcher leveler for the continuous stretch leveling of the juxtaposed strips during welding, said seam welders being positioned between entry and exit bridle rolls of said stretch leveler.

4,461,420

VENTABLE PACKAGE COVER

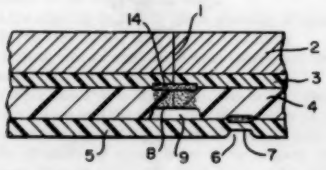
Laszlo S. Horvath, Geneva, Switzerland, assignor to Cod Inter Techniques SA, Geneva, Switzerland

Filed Oct. 22, 1982, Ser. No. 436,181

Claims priority, application Switzerland, Mar. 5, 1982, 1340/82

Int. Cl.³ B65D *81/34, 51/16*

U.S. Cl. 229—43 **7 Claims**



1. A package cover capable of being secured to and covering a container, said cover comprising:

(a) a vapor and liquid impermeable capping film including first and second, discrete films:

(i) the first film having a tear line extending around a predetermined area, and

(ii) the second film located below and secured to the first film along at least most of said tear line to form a weakened portion in said second film extending below said at least most of the tear line to facilitate tearing the second film along the tear line; and

(b) a vapor permeable, liquid impermeable inside film located below and secured to the second film of the capping film along a path outside of and extending around said tear line, said inner film being unsecured to the second film of the capping film in said predetermined area such that tearing the capping film along the tear incision and away from the inside film exposes the inside film to the ambient atmosphere to render the package cover vapor permeable.

4,461,421

RAILROAD CROSSING STRUCTURE

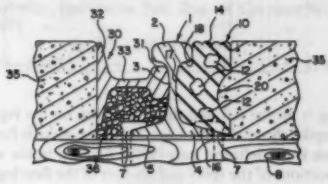
William D. Maass, Waterloo, Canada, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Aug. 2, 1982, Ser. No. 404,015

Claims priority, application Canada, Jun. 2, 1982, 404283

Int. Cl.³ E01C *9/04*

U.S. Cl. 238—8 **7 Claims**



1. A rail crossing structure comprising a supporting means for supporting the rail crossing structure; at least a pair of spaced rails mounted on said supporting means; each of said rails having a head, a base and an intermediate web interconnecting said base and said head; a longitudinally extending resilient pad mounted on one side of each of said rails; each of said pads having a plurality of bores extending longitudinally therethrough; each of said pads having an upper surface, a lower surface and two contoured side surfaces; said lower surfaces sealingly abuttingly contacting said base of said rails; said upper surfaces lying in the same general plane of the top of said rails; one of said sides of each of said pads having a major portion thereof in sealing and abutting contact with said intermediate web of said rail; the upper portion of said one side of each of said pads being generally planar and in abutting contact with said head of said rails; and the juncture of each said upper planar portions of said pads and said major portion of said one side of said pads in contact with said intermediate web being recessed to define a longitudinally extending channel with an upwardly disposed lip and a compression chamber in cooperation with said rail.

4,461,422

RAILWAY SPIKE AND AN ASSEMBLY ON A RAILWAY TRACK INCORPORATING THE SPIKE

Lance Harkus, Carlingford, Australia, assignor to Pandrol Limited, London, England

Filed Mar. 9, 1982, Ser. No. 356,287

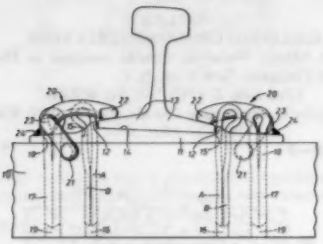
Claims priority, application United Kingdom, Mar. 20, 1981, 8108876; Australia, Oct. 14, 1981, 763291/81

Int. Cl.³ E01B *9/06*

U.S. Cl. 238—366 **9 Claims**

1. A railway spike which is suitable for use in holding a rail baseplate down on a railway sleeper, the spike comprising a bar which has been shaped to provide first and second legs, one end of one leg being joined by a part of the bar to one end of the other leg, the other ends of the legs being near each other and forming the nose of the spike, the spike being such that when it is in a particular position with its nose at the bottom, the spike is seen to comprise the following portions in succession, proceeding upwardly from the nose, a first portion in which the two legs are substantially straight, substantially vertical, substantially parallel to each other and very close together, then a second portion in which the legs diverge, then

a third portion in which the legs converge, then a fourth portion in which the legs diverge again and finally a fifth portion which includes the uppermost part of the spike, the fourth and fifth portions forming the spike-head, the spike further being such that when it is so viewed, whilst in said position, that the



first leg is on the left and the second leg on the right, no part of the spike above the third portion of the spike is further to the left than is the leftmost part of the first leg in the second and third portions of the spike and no part of the first leg above the third portion extends to the left as it proceeds away from the nose of the spike.

4,461,423

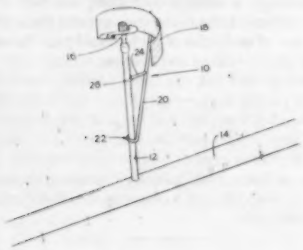
SPRINKLER SHIELD

J. C. Davis, 8724 Dublin Dr., Bakersfield, Calif. 93307, assignor to J. C. Davis; Charlotte Davis; Larry V. Anderson and Autrey Anderson, all of Bakersfield, Calif.

Filed Jun. 22, 1981, Ser. No. 276,185

Int. Cl.³ B05B *1/26*

U.S. Cl. 239—231 **12 Claims**



1. An improved sprinkler shield comprising:

an elongated resiliently bendable support rod having an upper end and a lower end;

a deflector mounted adjacent the upper end of said support rod and disposed to deflect fluid sprayed thereon;

jaw means mounted adjacent the lower end of said support rod and disposed to receive and release a sprinkler standpipe therein substantially laterally with respect to the axis of said standpipe when said support rod is disposed in a first angular relationship with said standpipe and to clampingly engage said standpipe when said support rod is disposed in a second angular relationship with respect to said standpipe; and

releasable positioning means mounted on said support rod intermediate the ends thereof and disposed to engage said standpipe substantially laterally with respect to the axis of said standpipe and hold said support rod in said second angular relationship with said standpipe with said jaw means clamplingly engaging said standpipe said support rod being resiliently bent about said jaw means by engaging said positioning means on said standpipe.

4,461,424

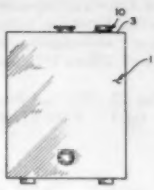
NOZZLE AND GUARD UNIT

Arthur V. Faltus, 1643 LaSalle St., Belleville, Ill. 62221

Continuation of Ser. No. 206,093, Nov. 12, 1980, abandoned. This application Jan. 5, 1983, Ser. No. 455,819

Int. Cl.³ B65D *59/04*

U.S. Cl. 239—288.5 **6 Claims**



1. A unitary, one-piece nozzle and guard unit secured to a tote bin, comprising a bottom wall, a boss extending from a flat surface of said bottom wall in one direction, a nozzle fitting extending from a suface of said bottom wall in the opposite direction, said boss, bottom wall and nozzle fitting having an open-ended passage extending completely through them, and a side wall integral with the bottom wall and spaced outwardly from and surrounding said nozzle fitting, said boss extending through a hole in a flat surface of said bin and said unit being secured to said bin entirely around an outside periphery of said bottom wall contiguous said flat wall of said bin.

4,461,425

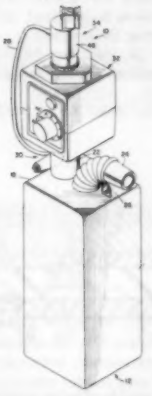
NEBULIZER SYSTEM

Kenneth G. Miller, Palatine, Ill., assignor to Respiratory Care, Inc., Arlington Heights, Ill.

Filed Jul. 13, 1982, Ser. No. 397,841

Int. Cl.³ B05B *17/06*

U.S. Cl. 239—338 **3 Claims**



1. In combination with a liquid storing container having an inflow port, an outflow port and a liquid feed port, a nebulizer system including a source of oxygen gas under pressure, vortex mixing means connected to said source and said liquid feed port for mixing the oxygen gas and the liquid to produce a vortical flow stream of a mixture of the liquid and the oxygen, means interconnected between the vortex mixing means and the inflow port of the container for conducting said vortical flow stream into the container through said inflow port producing an outflow of conditioned oxygen from the outflow port, and heating means mounted on the container in heat exchange relation to the conducting means for heating the

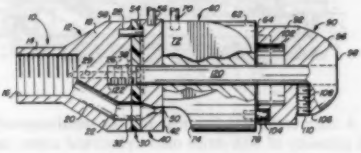
mixture in the vortical flow stream, said heating means and the vortex mixing means being connected in series between the source and the inflow port, wherein said vortex mixing means includes a housing having upper and lower axial ends enclosing a receiving chamber therebetween, an end wall connected to the housing closing said upper axial end, means connected to the source for introducing the oxygen gas to the receiving chamber adjacent said upper end wall, conduit means connected to the liquid feed port and extending through the receiving chamber from said upper end wall for discharge of the liquid from said lower axial end of the receiving chamber, flow restricting wall means connected to said housing at said lower axial end in radially spaced relation to the conduit means for directing restricted discharge of the oxygen gas into the liquid being discharged while the liquid is inside said conduit means, and an annular space extending from said chamber through said lower axial end to produce said vortical stream flow.

4,461,426

ADJUSTABLE AERIAL SPRAY NOZZLE APPARATUS

Gilman O. Christopher, 924 W. 11th Pl., Mesa, Ariz. 85201

Filed Dec. 10, 1981, Ser. No. 329,232
Int. Cl.³ B05B *1/12*
U.S. Cl. 239—394 **5 Claims**



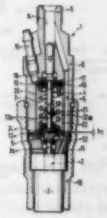
1. Spray nozzle apparatus, comprising, in combination: base means, including
a first central aperture, and
a bore through which fluid flows to be sprayed;
flow control means for controlling the flow of fluid from the bore, including
a plate,
a plurality of spray holes in the plate, each of a different diameter for controlling the flow of fluid from the base means, through which the fluid selectively flows from the bore,
a second central aperture aligned with the first central aperture of the base means, and
means for aligning each hole of the plurality of spray holes with the bore of the base means, including
an arcuate slot in one of the base means and the plate, and
a first pin movable in the arcuate slot in the other of the base means and the plate whereby relative movement of the first pin and the arcuate slot allows each hole of the plurality of spray holes to be aligned with the bore through which the fluid flows to be sprayed;
spray control means, including
a plurality of spray faces, each of which provides a different spray pattern and each of which is selectively movable to a spray hole of the flow control means to provide a plurality of desired spray patterns, and
a third central aperture aligned with the first and second central apertures;
pin means extending through the first, second, and third central apertures to secure together the base means, the flow control means, and the spray control means, and to define an axis of rotation on which the spray control moves to selectively align a spray face with a spray hole;
front cap means spaced apart from the base means and disposed adjacent to the spray control means and secured to the pin means;
a second pin on one of the front cap means and the spray control means; and
a second slot on the other of the front cap means and the spray control means for receiving the second pin and having an arcuate length to limit the arcuate movement of the spray control means to align the spray faces with a spray hole in the flow control means.

4,461,427

FUEL INJECTION NOZZLE

Odon Kopsé, Utzenstorf, Switzerland, and Néstor Rodriguez-Amaya, Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 11, 1982, Ser. No. 347,814
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1981, 3105671
Int. Cl.³ F02M *45/08*
U.S. Cl. 239—533.5 **11 Claims**



1. A fuel injection nozzle for internal combustion engines, particularly a cold-starting valve, having an inlet in a nozzle holder, a nozzle body provided with a fuel injection opening, a valve needle arranged to close said injection opening and to open counter to the force of a closing spring in said nozzle holder, an adjusting piston, said valve needle further being urged in a closing direction by an additional force via said adjusting piston subjected to a fuel inlet control pressure, said closing spring forming a yielding stop for said adjusting piston, an upper spring support plate which forms a stop between said closing spring and a collar on said adjusting piston, a lower spring support plate which supports one end of said closing spring, said lower spring support plate having a passageway bore which receives one end of an extension tang in which said one end of said extension tang acts as a pre-stroke for said valve needle, said adjusting piston collar being arranged to rest on said upper spring support plate, and a restoring spring being supported at one end on an annular holder on said adjusting piston extension tang which forms a step for the pre-stroke and supported on another end on said upper spring support plate, said restoring spring comprising a compression spring means which presses said adjusting piston in a direction of said valve needle to form a clearly defined stop for a pre-stroke (h_1) for said injection nozzle.

4,461,428

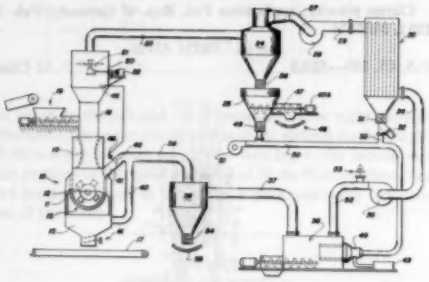
APPARATUS FOR REDUCING FRAIBLE MATERIALS INTO COARSE AND FINE FRACTIONS

Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher and Pulverizer Company, St. Louis, Mo.

Filed Feb. 18, 1982, Ser. No. 350,070
Int. Cl.³ B02C *13/288, 13/08*
U.S. Cl. 241—34 **1 Claim**

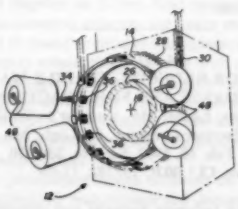
1. Apparatus for reducing material and distinguishing between coarse fractions and fine fractions, said apparatus comprising:
(a) a material reducing mill having a rotary material fragmenter and adjacent wall means defining passage for the coarse fractions produced by said rotary fragmenter;
(b) means for feeding material to be reduced;

(c) passage forming means connecting said feeding means with said reducing mill, and including a Venturi section between said feeding means and said reducing mill;
(d) conduit means connected across said reducing mill and passage forming means said conduit means including a first branch connected into said material reducing mill below said rotary material fragmenter, a second branch conduit connected into said material reducing mill above said rotary material fragmenter;
(e) fluid flow propelling means connected into said conduit means and operable to create a flow of gaseous fluid through said reducing mill and passage forming means, said gaseous fluid flow acting to strip fine fractions from coarse fractions passing through said wall means and



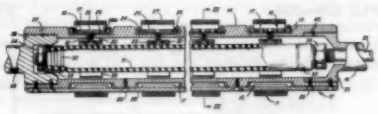
further stripping fine fractions from material introduced by said feeding means into said passage forming means;
(f) means for discharging the coarse fractions from said reducing mill, and for discharging the fine fractions at a predetermined location in said conduit means;
(g) a source of heated gaseous medium connected to said conduit means;
(h) flow control valve means operably mounted in said second branch conduit; and
(i) operating means connected to said valve means, said operating means being responsive to the fluid flow pressure in said passage forming means for positioning said valve means to allow heated gaseous medium to flow in said second branch conduit for maintaining a predetermined fluid flow pressure in said passage forming means.

4,461,429
TAPE MACHINE SUPPORT
Robert G. Goekler, Owasso, and Charles W. Hunt, Oologah, both of Okla., assignors to Crutcher Resources Corporation, Houston, Tex.
Filed Apr. 11, 1983, Ser. No. 483,882
Int. Cl.³ B65H *81/08*
U.S. Cl. 242—7.22 **6 Claims**



1. In a machine for applying tape to a pipe wherein an annular member is rotated about an axis with the pipe travelling through the annular member along the axis and the annular member supports at least one tape roll carrying spindle to support a tape roll for application of the tape to the pipe, the spindle being secured on the annular member at a predetermined radius from the axis, the combination which comprises:
a rigid ring having a smaller radius than the predetermined radius;
a plurality of struts mounted at a first end on said annular member and mounted to said ring at a second end, said ring being spaced from the annular member along the axis, said plurality of struts extending along a conical surface having its locus on the axis; and
a brace arm assembly secured between said ring and selected ones of said spindles to provide support for said selected ones of said spindles to oppose centrifugal forces created when the annular member rotates to apply tape to the pipe.

4,461,430
DIFFERENTIAL WINDING AIR SHAFT
Louis Lever, 162 Wayfair Cir., Wyckoff, N.J. 07581
Filed Mar. 1, 1983, Ser. No. 471,001
Int. Cl.³ B65H *19/04, 75/24*
U.S. Cl. 242—56.9 **11 Claims**



1. A differential winding mandrel for simultaneously winding a plurality of web strips onto cylindrical cores, said mandrel comprising:
a shaft comprising a wall defining a hollow portion along a substantial part of the length of the shaft, the wall having a plurality of rows of axially spaced openings through it, corresponding openings in each row lying in a plane perpendicular to the axis of the shaft;
a plurality of core supports in each of the planes, each core support comprising an arcuate shell disposed externally of the shaft and having a part cylindrical core-engaging outer surface portion, means extending outwardly beyond the part cylindrical outer surface portion of the shell to engage the edges of a respective core supported thereon to prevent axial movement of the core during winding of a web strip on the core, an inwardly extending stem movably disposed in a corresponding one of the openings in the wall of the shaft, and an enlarged foot on the inner end of the stem;
biasing means disposed between the foot of each stem and the inner surface of the shaft wall for urging the stem radially inward; and
an elongated, expandable, elastomeric tube extending substantially coaxially within the hollow shaft and comprising means to allow fluid to be forced into the tube to expand the tube radially against the feet of the core supports to force the arcuate shells outwardly, whereby the core supports in each of the planes can frictionally engage angularly extensive portions of the inner surface of one core to provide tangential drive of that core independently of other cores on the core supports in others of the planes.

4,461,431
EDGE GUIDE UNWINDING APPARATUS
Thomas W. Wiley, Asheville, and William R. Joyce, Gerton, both of N.C., assignors to Tex-Fab, Inc., Gerton, N.C.
Filed May 18, 1981, Ser. No. 264,974
Int. Cl.³ B65H *25/26*
U.S. Cl. 242—57.1 **8 Claims**

1. An apparatus for unwinding a web of material from a

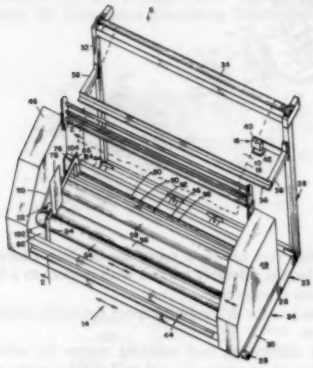
supply roll and monitoring and correcting the alignment of the continuously moving web of material as the web unwinds from the supply roll, comprising:

a cradle unwinder for supporting the supply roll of material and for unwinding the web from the supply roll;

means for mounting said cradle unwinder for movement transversely of the direction of movement of the web;

detecting means disposed at one edge of the web of material unwinding from the supply roll for detecting transverse deviations of the web from the desired path of travel;

a reversible motor mounted to said cradle unwinder and operatively associated with said detecting means for energization in response to a signal from said detecting means



indicating the web has transversely deviated from the desired path of travel;

force reaction means stationary with respect to said cradle unwinder; and,

chain and sprocket means mounted on said cradle unwinder with the chain disposed transversely of the web and interconnecting said reversible motor and said force reaction means, the chain being fixedly attached at one of its lengths to said force reaction means for transferring the driving force generated by said reversible motor to said cradle unwinder and moving said cradle unwinder in a transverse direction of the web to maintain the web in the desired path of travel.

4,461,432

UNWINDING APPARATUS FOR WEBS OF MATERIAL, IN PARTICULAR PLASTIC FILMS

Armin S. P. Hutzenlaub, Wiehl, Fed. Rep. of Germany, assignor to Erwin Kampf GmbH & Co. Maschinenfabrik, Fed. Rep. of Germany

PCT No. PCT/EP81/00062, 371 Date Jan. 15, 1982, 102(e) Date Feb. 7, 1982, PCT Pub. No. WO81/03480, PCT Pub. Date Dec. 10, 1981

PCT Filed Jun. 4, 1981, Ser. No. 341,994

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1980, 3021532

Int. Cl.³ B65H *17/20, 23/18, 23/32, 59/00*

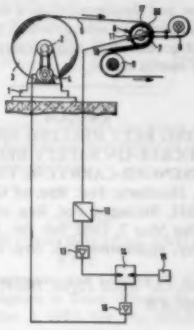
U.S. Cl. 242—75.51 **4 Claims**

1. In an unwinding apparatus for webs of material, in particular plastic films, having a roll of the web material, the circumference of which may be out-of-round, supported on an unwinding shaft driven by a motor-generator and a driven direction-changing roller, the improvements comprising:

(a) a direction-changing guide means having a foraminous wall defining a hollow interior, the web material passing around the guide means through an angle of at least 140°;

(b) a source of pressurized air connected to the guide means such that pressurized air is supplied to the interior of the guide means, a portion of the air passing out through the foraminous wall to form an air cushion between the guide means and the web material, the air pressure in the interior of the guide means being at least three times the pressure of the air cushion to prevent the web material from coming into contact with the guide means during pulsations in the web caused by the out-of-roundness of the web roll;

(c) pressure measuring means to measure the air pressure in the air cushion;



(d) control means connected to the pressure measuring means and the motor-generator to regulate the motor-generator as a function of the pressure in the air cushion; and,

(e) a discharge flow wall means in the form of an apertured plate located adjacent the exit side of the direction changing guide means substantially parallel to the web of film for dissipating the air cushion through apertures in the plate.

4,461,433

TAPE SPEED CONTROL APPARATUS

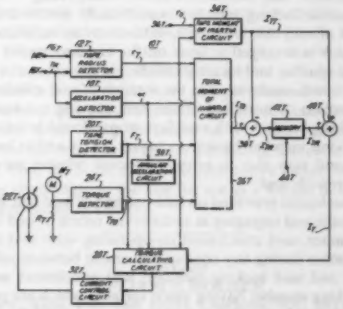
Tetsuo Kani, Sagamihara, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 14, 1982, Ser. No. 368,105

Claims priority, application Japan, Apr. 14, 1981, 56-56043

Int. Cl.³ B65H *59/38;* **G11B** *15/48;* **H02P** *5/46*

U.S. Cl. 242—75.51 **18 Claims**



1. Apparatus for controlling means for advancing tape extending between first and second reels during a change in the speed of advancement of said tape, said tape being wound about said reels and having a radius associated with each reel, said apparatus comprising:

means for detecting the radius of said tape wound about at least one of said reels;

means for detecting one of an acceleration and deceleration of said tape;

means for detecting a torque imparted to at least one of said reels by the means for advancing;

means for producing a total moment of inertia signal corresponding to the total moment of inertia of at least one of said reels with said tape wound thereabout, in response to said detected radius, said detected one of said acceleration and deceleration, and said detected torque; and

means for controlling said means for advancing to produce a desired torque necessary to maintain said one of said acceleration and deceleration at a substantially constant value, in response to said detected radius, said detected one of said acceleration and deceleration and said total moment of inertia signal.

4,461,434

SELF-LOCKING BELT REELING MECHANISM FOR BUCKLE-ON SAFETY BELTS IN PASSENGER-CARRYING VEHICLES

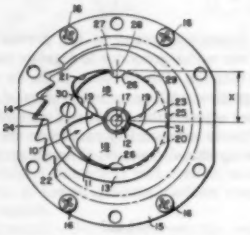
Klaus Butenop, Herzhorn, Fed. Rep. of Germany, assignor to Autoflug GmbH, Rellingen, Fed. Rep. of Germany

Filed May 7, 1982, Ser. No. 375,821

Claims priority, application Fed. Rep. of Germany, May 9, 1981, 3118437

Int. Cl.³ A62B *35/02*; B65H *75/48*

U.S. Cl. 242—107.4 B **13 Claims**



1. A self-locking belt reeling mechanism for buckle-on safety belts in passenger-carrying vehicles, said mechanism having a spindle which is mounted in a housing, is subjected to means exerting spring tension, and on which a belt can be rolled up, said housing being provided with first stops to arrest rotation of the spindle; said mechanism further comprising:

an inertial locking member eccentrically mounted on one end of said belt winding spindle about an eccentric point which is arranged at least on the circumferential line of said spindle; said locking member, in the event of a predetermined acceleration in the rotation of said spindle in the direction of unrolling of the belt, moving outwards and making contact with said first stops of said housing; said locking member having a curved recess and at least one second stop also to arrest rotational relative movement therewith; and

an attachment provided on said one end of said belt winding spindle and engaging in said curved recess of said locking member, said attachment co-operating with said locking member during any relative movement between said spindle and said locking member; said attachment and said locking member having guide surfaces which are portions of circles drawn about said eccentric point and form circular paths, with said locking member being guided only along said circular paths, said attachment comprising two substantially oval parts of octagonal configuration mounted on each side of the axis of said spindle, with the circumferential surfaces of said oval part forming said circular paths; and in which said curved recess of said locking member fits over said attachment and its circular surfaces with the clearance required for the outwardly directed relative movement between said spindle and said locking member, with said eccentric mounting of said locking member being located in the region of an apex of one of said oval parts of said attachment.

4,461,435

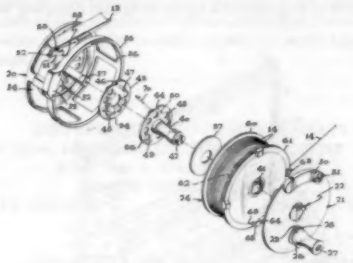
FISHING REEL

Oscar Kovalovsky, 11154 Debby St., North Hollywood, Calif. 91606

Filed Jun. 29, 1982, Ser. No. 393,455

Int. Cl.³ A01K *89/02*

U.S. Cl. 242—214 **7 Claims**



1. In a fishing reel having a spool for holding a length of fishing line which is rotatably carried with respect to a frame, the combination comprising:

a winding means for driving said spool rotatably carried on said frame;

drag means carried on said winding means for selective, applied tension engagement with said spool in a slip-clutch manner via said winding means in a first mode of operation;

direct drive means cooperatively carried between said winding means and said spool for selective non-slip, positive drive of said spool in a second mode of operation;

selector means carried on said winding means for actuating said direct drive means into or out of said second mode of operation;

disconnect means operably carried between said frame and said winding means for disabling said direct drive means so that said spool rotates to the exclusion of rotation of said winding means against the applied tension of said drag means;

said winding means includes a crank plate with an outwardly extending turning knob;

said direct drive means includes a plurality of spaced apart lugs projecting laterally from said spool; and

a resiliently mounted latch carried on said crank plate normally biased laterally onto abutting engagement with a selected one of said plurality of lugs when said direct drive means is in said second mode of operation.

4,461,436

GYRO STABILIZED FLYING SAUCER MODEL

Gene Messina, 12 Buccaneer La., E. Setauket, N.Y. 11733

Continuation-in-part of Ser. No. 097,432, Nov. 26, 1979, abandoned. This application Dec. 21, 1981, Ser. No. 332,954

Int. Cl.³ B64C *27/82, 39/06*

U.S. Cl. 244—23 C **5 Claims**

1. A flying saucer model, comprising:

(a) a generally disc shaped body normally positioned to place the transverse axes in the horizontal plane,

(b) a first generally annular passageway passing vertically through the body,

(c) a thrust generating device smaller than and located within the passageway to produce a downward flow in the passageway,

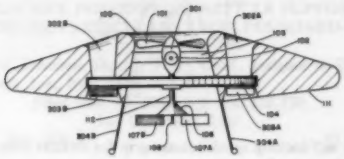
(d) first mounting means to secure the thrust generating device to said body, said first mounting means having

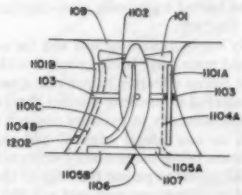
openings to permit air to flow through said first passageway about the thrust generating device, and through the openings in the first mounting means,

(e) a first gyroscopic rotor comprising a hub, spokes and a rim, said spokes being fin-shaped, said rotor being positioned within the first passageway below the first thrust generating device with its transverse axes in the horizontal plane, the fin shaped spokes being set at an angle to cause the rotor to rotate when subject to the downward flow of air from the first thrust generating device,

(f) second mounting means to rotatably mount the rotor at its hub to the body, said second mounting means having openings to permit air to pass through the first passageway,

and wherein the first passageway is centrally located within the body, the first thrust generating device is formed by the





combination of a propeller and a reciprocating engine with a throttle and an engine shaft, the engine shaft being connected to and driving the propeller, and the combination being positioned in the passageway to produce a downward flow of air within the first passageway, and further comprising a counter-torque tube mounted to said body and placed within the path of the downward flow in the first passageway to counteract the torque produced by the recriprocating engine and prevent rotation of the body, the tube comprising a hollow shaft bent to orient an exhaust port, formed of the one end of the shaft, in a position generally orthogonal to an input port, formed of the opposite end of the shaft, the shaft having an open face along a portion near the input port that exposes the hollow interior to serve as a means of capturing the down flow and channeling it into the tube for expulsion from the exhaust port in a direction which will provide a counterrotational torque.

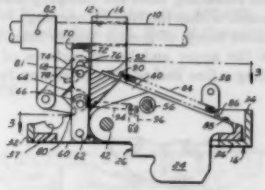
4,461,437

TENSION RELEASE

Robert J. Ashley, Sr., Southgate, and William H. Herrick, Livonia, both of Mich., assignors to Brooks & Perkins, Inc., Livonia, Mich.

Filed Jul. 16, 1981, Ser. No. 284,053
Int. Cl.³ B64C *1/08*
U.S. Cl. 244—137 R **20 Claims**

1. A cargo lock for slidable cargo comprising a support housing, a detent pivoted to said housing for movement between locking and unlocked positions, pivotally interconnected over-center toggle links connected between said support and detent, a release link pivotally connected to the pivot connection between said toggle links, and a cam link pivotally connected to said release link and having a camming abutment portion thereon, actuating means for moving said cam link between a position in which said cam link and said release link operate as tension means to pull the pivot connection between said toggle links away from their over-center blocking position and a limiting position in which the camming abutment portion



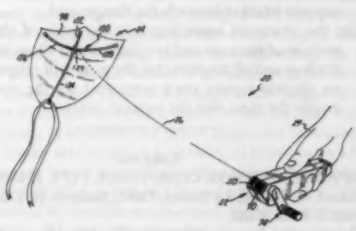
of said cam link positively engages the pivot connection between said toggle links to block movement of said toggle links out of their over-center position.

4,461,438

APPARATUS FOR CONTROLLING AND STORING A KITE

Peter D. Pook, Bloomington, and Charles W. Girsch, St. Paul, both of Minn., assignors to Team Winsor, St. Paul, Minn.

Filed Mar. 1, 1982, Ser. No. 353,055
Int. Cl.³ B64C *31/06*
U.S. Cl. 244—153 R **17 Claims**



1. A kite apparatus comprising:

a collapsible kite;

a kite line having a first end and a second end, the first end being attached to the collapsible kite; and

a housing having an interior compartment for storing the kite in a collapsed state and reel means for storing the kite line with the second end of the kite line being attached to said reel means for storing, the housing further including a door adapted to reveal the interior compartment and allow the kite to be stored within the compartment in a collapsed state and the door being securable to a closed position and wherein the door has means for permitting complete detachment from the housing and has connective means for facilitating connection to the kite for use as a weight in the control and flying of the kite.

4,461,439

APPLIANCE HOLDER

Thomas C. Rose, P.O. Box 13191, Charlotte, N.C. 28226

Filed Aug. 31, 1981, Ser. No. 297,716
Int. Cl.³ F16L *3/00*
U.S. Cl. 248—51 **6 Claims**

1. A holder for releasably attaching an appliance having an electric supply cord to a vertical support surface comprising

(a) a support bracket;

(b) means for attaching the support bracket to a vertical supporting surface;

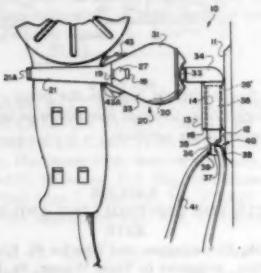
(c) a flange projecting from one surface of the support bracket and having a tubular opening extending vertically

and communicating with the upper and lower surfaces of the flange;

(d) a clamping portion releasably engageable with the appliance;

(e) a stem extending from the clamping portion and loosely receivable within the tubular opening;

(f) the stem being of greater length than the distance between the upper and lower surfaces of the flange and including a free end portion extending beyond the lower



surface of the flange when the stem is fully seated in the tubular opening;

(g) an abutment extending from said one surface of the support bracket beneath the flange; and

(h) the abutment extending into the path of the free end portion of the stem and into sufficiently close proximity to the free end of the stem that the stem will releasably retain an electric supply cord supported on the abutment between the stem and the support bracket.

4,461,440

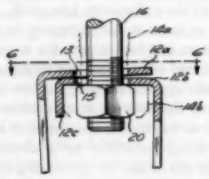
PIPE HANGER FOR COMPOSITE PIPE HANGER NUT

Richard W. Heath, La Habra, Calif., assignor to Tolco Incorporated, Brea, Calif.

Continuation-in-part of Ser. No. 374,179, May 3, 1982. This application Feb. 22, 1983, Ser. No. 468,074

Int. Cl.³ E21F *17/02*

U.S. Cl. 248—59 **7 Claims**



1. A pipe hanger comprising:

a lower pipe hanger portion for supporting a pipe;

upper, overlapping end portions on said pipe hanger each having a hole therethrough for passage of a pipe hanger rod;

and

a downwardly extending flange on one overlapping end portion having a flat surface for engaging a flat side of a retention nut to be connected to the lower end of said pipe hanger rod to prevent inadvertent loosening of the nut, wherein said hanger portion includes means horizontally urging said flange against said nut and wherein said holes in the upper overlapping portions of the pipe hanger are misaligned when the hanger is unrestrained but said pipe hanger lower portion is resilient such that the holes may be manually aligned to permit insertion of the rod and the resiliency provides the means for horizontally urging the flange against the nut.

4,461,441

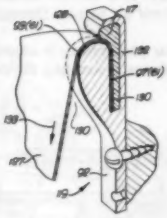
BAG HOLDER

Earl C. Briggs, 606 Michigan Blvd., Pasadena, Calif. 91107

Division of Ser. No. 19,296, Mar. 12, 1979, Pat. No. 4,304,378. This application Sep. 14, 1981, Ser. No. 301,727

Int. Cl.³ B65B *67/12*

U.S. Cl. 248—100 **7 Claims**



1. A self-locking quick release grip for flexible sheeting and the like comprising:

an elongated rigid main body securable at one end to a support and having a generally semi-circular surface at the other end thereof;

said generally semi-circular surface and the adjacent lateral edges of said main body being covered with a multiplicity of grit-like points effective to provide a self-locking grip on sheet material in pressure contact therewith;

resilient means normally in pressure contact with said grit-like points on one lateral edge of said main body, said resilient means being momentarily deflectable away from said grit-like points to permit the edge of sheet material to be inserted or withdrawn past said grit-like points and, at other times, being effective to press the sheet material into self-locking gripping contact with said points; and

said grit-like points on said generally semi-circular surface bing effective to supplement said last mentioned grit-like points in gripping said sheet material when draped thereover under tension.

4,461,442

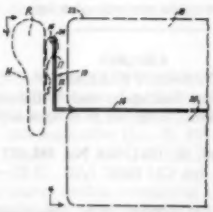
HOLSTER HOLDER FOR BED

E. Dale Keenan, 12909 Old Marlboro Pk., Upper Marlboro, Md. 20870

Filed Sep. 30, 1982, Ser. No. 428,583

Int. Cl.³ A47F *7/00*

U.S. Cl. 248—205.1 **1 Claim**



1. A holster bracket for supporting a holster and pistol on the side of a bed for ready use comprising a one-piece L-shaped sheet metal bracket having a planar horizontal leg and a planar vertical leg, said horizontal leg being longer than said vertical leg and fitting under the mattress on said bed, an angular struck up holster belt loop receiving portion formed on the end por-

tion of the vertical leg and in planar relationship with said leg, said struck up portion being at an angle between 5 and ten degrees to the main portion of said vertical leg, said angular struck up portion being below the level of said mattress, whereby when a holster is positioned on said struck up portion, the angle of the holster and pistol to the bed allows easy access to said pistol in an emergency.

4,461,443

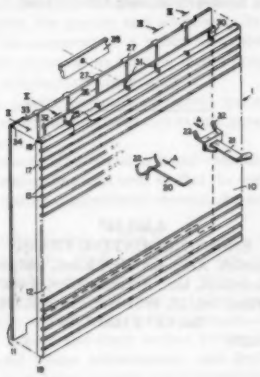
SELECTIVE POSITIONING ARTICLE SUPPORT STRUCTURE, PARTICULARLY FOR PEGBOARD-TYPE HOOK

Sidney M. Dauman, Beverly Hills, Calif., assignor to Dauman Displays, Inc., New York, N.Y.

Filed Nov. 13, 1981, Ser. No. 320,770

Int. Cl.³ E04G *3/00*

U.S. Cl. 248—220.3 **13 Claims**



1. Selective positioning article support structure for combination with hook members (20, 21, 22) having a predetermined thickness comprising

a front panel (10) having a front side (12) and a back side;

a group of first stiffening ribs (15) secured to the back side of the front panel and extending in a first direction;

a group of second stiffening ribs (16) secured to the back side of the front panel and extending in a second direction which forms an angle of at least 45° with respect to said first direction;

slots (13) formed in the front panel (10) and just slightly wider than said predetermined thickness of the hook members, and extending parallel to and adjacent one (16) of the groups of stiffening ribs (15, 16);

and end walls (17, 18, 19) extending around the outer circumference of the panel, and essentially laterally enclosing the first and second groups of stiffening ribs (15, 16); and wherein the front panel (10), the end walls, and the first and second groups of stiffening ribs (15, 16) are all of plastic material and formed as a unitary structure with the front panel; and

the stiffening ribs (16) of said one of the groups, together with portions of the front panel adjacent the slots, form an "L" structural rail element to provide stiffness to the front panel and render it resistant to twisting.

4,461,444

SPRUNG VEHICLE SEAT

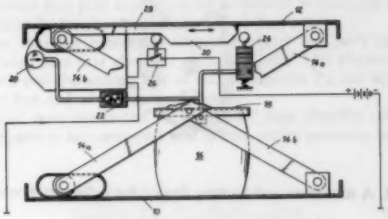
Karl J. Grassl, Schwandorf, and Hermann Meiller, Amberg, both of Fed. Rep. of Germany, assignors to Willibald Grammer, Amberg, Fed. Rep. of Germany

Filed Nov. 12, 1981, Ser. No. 320,612

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043177

Int. Cl.³ A47C *3/30*

U.S. Cl. 248—550 **20 Claims**

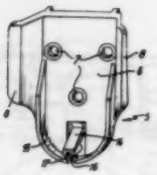


1. In a sprung vehicle seat with adjustment for height and for weight so that the vehicle seat is always at a manually adjustable preset height, even when users of the seat are of different weights, said sprung vehicle seat being of the type which includes a gas spring arranged between a seat support frame and a base frame; a switching means for controlling the gas spring; an actuator means which is movable relative to the switching means when there is a change in the height of the seat support frame above the base frame; a slide member which for the purposes of adjusting the preset height can be locked to one of the frames selectively in a plurality of positions on a line of displacement which is parallel to the relative displacement between the switching means and the actuator means; a holder which is carried by the slide member and movable transversely with respect to the line of displacement thereof between a first and a second position and which carries either the switching means or the actuator means, wherein the holder is spring-biassed toward the first position, in which first position the actuator means and the switching means are spaced from each other in the transverse direction of their relative movement by a spacing such that the actuator means and the switching means are non-cooperable, thereby to avoid actuation of the gas spring during normal spring movement of the seat while the seat is occupied by a user, while in the second position of the holder the actuator means and the switching means are sufficiently close together in the transverse direction of their relative movement that the actuator means and the switching means are co-operable to provide adjustment for weight; and a three-stage actuating means which includes at least one pivotal actuating lever and which in the first actuating stage pivots the holder into its second position, in the subsequent second actuating stage releases the locking action on the slide member, and in a third actuating stage shifts the slide member from one position into another position, the improvement comprising: the actuating means has only a single actuating lever which is manually movable in two different modes and first and second entrainment means, the first entrainment means urging the holder into the second position during the first actuating stage and the second entrainment means releasing the locking action on the slide member during the second actuating stage as the actuating lever is moved in one of said modes; and the actuating means includes a third entrainment means which is operative when the actuating lever is actuated in the other mode of actuation thereof in the third actuating phase so as to entrain the slide member to move it from one position to another.

4,461,445
MOUNTING DEVICES FOR DISPENSERS

Audley B. Williamson; Stewart Banks, and Frances J. Rice, all of Milford, England, assignors to Appor Limited, Milford, England

Filed Jan. 16, 1981, Ser. No. 225,575
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—551 **5 Claims**



1. A mounting and locking device for a dispenser, comprising:

a mounting plate adapted to be fixed to a support,

mounting means carried by the mounting plate for engaging a dispenser so as to attach the dispenser to the mounting plate, the mounting means being linearly elongated in one direction and the dispenser being moved linearly in that direction with respect to the mounting means when attaching the dispenser to the mounting plate,

a latch projecting from the mounting plate into the path of linear movement of a part of the dispenser, the latch being resiliently moveable in a direction transverse to the plane of the mounting plate into and out of said path of movement, and being so formed that it permits the dispenser part to pass it when the dispenser is being moved in the direction for attaching the dispenser to the mounting plate and prevents removal of the dispenser from the mounting plate by movement of the dispenser in the opposite direction, and the latch being carried by the mounting plate at a location which is hidden when the dispenser is attached to the mounting plate,

means carried by the latch for engagement by a tool for moving the latch resiliently out of the path of movement of the dispenser part, to permit linear movement of the dispenser with respect to the mounting plate, in a direction opposite to the direction in which the dispenser is moved when attaching it to the mounting plate, so as to remove the dispenser from the mounting plate,

a peripheral rim on the mounting plate, said latch member projecting beyond the rim in its locking position, and

an opening in the peripheral rim for providing access for a tool to the means carried by the latch for moving the latch, the opening being diemensioned to restrict access other than by use of a tool.

4,461,446
HERMETIC REFRIGERATION COMPRESSOR INSTALLATION AND METHOD

Billy B. Hannibal; Kennard L. Wise, and Thomas A. Jacoby, all of Tecumseh, Mich., assignors to Tecumseh Products Company, Tecumseh, Mich.

Filed Sep. 8, 1981, Ser. No. 299,719
Int. Cl.³ H01Q *1/12*
U.S. Cl. 248—634 **14 Claims**

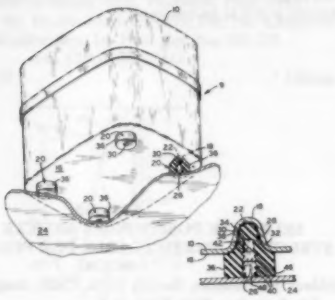
1. A hermetic refrigeration compressor installation comprising:

an outer housing containing a refrigeration compressor unit and hermetically sealing the unit from the ambient environment,

a plurality of indentations in an outer surface of said outer housing,

a plurality of generally elastic grommets each having a bore therein, each of said grommets having a grommet tip adhesively secured within its corresponding indentation, and

a base separate from said housing and having a plurality of projections, each of said projections being positioned on

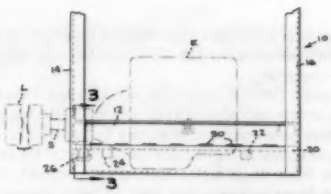


the base so as to be in general axial alignment with the bore of its corresponding grommet, said projection being received and secured within the bore so that the outer housing is resiliently mounted to the base.

4,461,447
ENGINE MOUNTING FRAME

Clifford E. Gottlob, Arkansas City, Kans., assignor to Gottlob Engine Conversions, Inc., Arkansas City, Kans.

Filed Oct. 23, 1981, Ser. No. 315,298
Int. Cl.³ F16M *1/00*
U.S. Cl. 248—678 **10 Claims**



1. An engine mounting frame comprising:

a pair of parallel longitudinal beams, at least one longitudinal beam comprising first and second channels each including a pair of spaced, substantially parallel flanges and a web transverse thereto, said channels opening in opposite directions and having their webs substantially parallel, the inner surface of the flange of one channel engaging the inner surface of the flange of the other channel, and weld means joining said channels together, said weld means being at the free edges of each of said engaging flanges,

transverse beams connected to the longitudinal beams, and at least one transverse beam welded to a said engaged flange of said longitudinal beam, and

means for connecting a load to said one transverse beam,

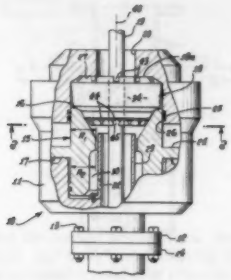
whereby vibrations from an engine on said frame are dampened by said longitudinal beam.

4,461,448

WELL BLOWOUT PREVENTER, AND PACKING ELEMENT

Wai Huey, Los Angeles; Fernando Murman, Rancho Palo Verdes, and Eugene Matsuda, Laguna Hills, all of Calif., assignors to Hydril Company, Los Angeles, Calif.

Filed Jun. 25, 1981, Ser. No. 277,341
Int. Cl.³ E21B *33/06*
U.S. Cl. 251—1 B **62 Claims**



1. In an annular blowout preventer packer unit having a longitudinal axis, the packer unit adapted to be compressed during axial advancement of a piston in a housing, and to engage surface extent of the housing facing inwardly toward said axis, the combination comprising

(a) metallic inserts generally circularly spaced about said axis, the inserts having webs that extend generally longitudinally, and

(b) an annulus of elastomeric material extending about said axis and embedding said webs so that the webs anchor the material during displacement thereof, the annulus having a bore,

(c) the annulus having a first body section located to be radially inwardly displaced by the piston during its axial advancement, and a second body section located to be axially compressed by the piston during its advancement so that the second body section remains compressively engaged against said inner surface extent of the housing during said piston advancement, said first and second body sections being integral and in longitudinal alignment prior to said compression of the packer unit by the piston,

(d) said first body section having a first frusto-conical portion of lesser angularity relative to said axis and a second frusto-conical portion of greater angularity relative to said axis, said second portion having greater radial spacing from said axis than said first portion, said portions located radially outwardly of the webs.

4,461,449

INTEGRAL HYDRAULIC BLOCKING AND RELIEF VALVE

Bernus G. Turner, Woodinville, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 145,511, May 1, 1980, abandoned. This application Jun. 8, 1982, Ser. No. 386,470
Int. Cl.³ F16K *31/122*
U.S. Cl. 251—62 **2 Claims**

1. An integral blocking and relief valve for blocking the flow of hydraulic fluid unless the pressure of said fluid exceeds a predetermined value, comprising:

a first input port adapted to be connected to the hydraulic fluid source to be blocked and relieved;

a first piston P_A slidably constrained in a first chamber, said first chamber being connected to said first input port and said piston P_A having an area A_A at a first end, said area A_A being exposed to hydraulic pressure in said first chamber;

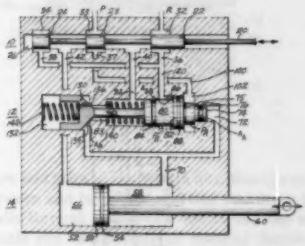
a second piston P_B having a first portion being slidably constrained in a pressure relief chamber and a second portion integral with the first end of said first portion and being slidably constrained in, and exposing an area A_{SB} to a relief bias chamber, said second piston P_B further comprising a plunger portion extending from the second end of said first portion;

a second input port connected to said pressure relief chamber and adapted to be connected to a system controlled hydraulic flow line;

a pressure bias port adapted to be connected to a source of system hydraulic pressure;

a bias chamber connected to said pressure bias port and joining said first chamber with said relief bias chamber such that the second end of said first piston P_A can abut the free end of said second portion;

a relief port connected to said relief bias chamber and adapted to be connected to a system return pressure; and



a poppet valve being slidably constrained in a poppet chamber, said poppet chamber joining with said pressure relief chamber and said first input port such that hydraulic fluid at said first input port is controllably passed to said pressure relief chamber dependent on the position of said poppet, said poppet exposing an area A_p to said pressure relief chamber and being engageable by said plunger portion of the second piston to drive the poppet to a position to allow flow from said input port to said pressure relief chamber, said relief bias chamber being directly connected to the system return pressure in all positions of the poppet valve

the first piston exposed area A_A, the poppet exposed area A_p and the second piston second portion exposed A_{SB} being defined by:

$$A_{SB}=A_A-A_p$$

whereby the poppet is driven to allow flow from the first input port to the relief chamber at a predetermined pressure of fluid in said first input port independent of the level of system pressure.

4,461,450

REMOTE CONTROL CHOKE

John P. Soland, Spring, and Charles D. Bridges, Houston, both of Tex., assignors to Combustion Engineering, Inc., Windsor, Conn.

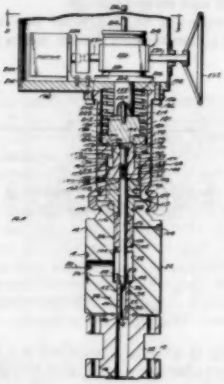
Filed Jun. 25, 1982, Ser. No. 392,322
Int. Cl.³ F16K *31/363, 51/00*
U.S. Cl. 251—63.5 **7 Claims**

3. A remote control choke, comprising:

housing means having longitudinal bore means, having fluid inlet passage means laterally joining said longitudinal bore means, and having a fluid outlet passage means from one end of the longitudinal bore means; a chamber within said housing means and connecting with said fluid inlet passage means and outlet passage means;

a choke valve stem projecting into said chamber through the other end of the longitudinal bore means; valve seat means provided in said chamber for said fluid outlet passage means; tip means provided on said choke valve stem within said chamber, and constructed and arranged to coact with said valve seat means to provide a closable, size-adjustable orifice for controlling fluid flow from said fluid inlet passage means to said fluid outlet passage means;

said choke valve stem having means providing a piston thereon, and said housing means including means providing a cylinder in which said piston is slidingly sealingly received; respective fluid ports connecting with said cylinder on both sides of said piston so that fluid pressure may be applied to either or both sides of the piston to tend to extend and withdraw the choke valve stem and thus adjust the effective size of the choke valve orifice;



an adjustable stop means having a base that is fixed in relation to said housing means and which includes an axially adjustably positionable jacking member having a shoulder providing a stop; means for axially adjusting the jacking member stop relative to the housing means;

the choke valve stem being arranged to bear against said stop when maximally extended as an adjustable limitation to further extension thereof and thus as a positive limitation on the size of said choke valve orifice;

the means for axially adjusting the jacking member stop relative to the housing means including a laterally projecting input shaft which, when reversibly manipulated causes said jacking member to be correspondingly moved axially inwardly and axially outwardly;

and means provided on said shaft for reversibly manipulating said shaft to thereby adjust said stop.

4,461,451

SLIDE VALVE FOR CONTAINER OF BULK MATERIAL

Dieter Heep, Bergatreute, and Norbert Eberhard, Ertingen, both of Fed. Rep. of Germany, assignors to Waeschle Maschinenfabrik GmbH, Ravensburg, Fed. Rep. of Germany

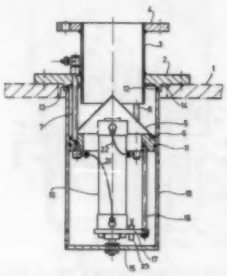
Filed Dec. 22, 1981, Ser. No. 333,393

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1980, 3049473

Int. Cl.³ F16K *31/122, 1/12*

U.S. Cl. 251—63.5 **14 Claims**

1. A slide valve for a container with an upright supply of a bulk material, comprising means forming an inlet opening of a predetermined diameter and including an inlet tube; sealing means including a sealing face; a tubular slider movable relative to said inlet opening between an open position in which it releases an annular gap for passing the bulk material and a closed position in which it closes said annular gap, said inlet tube forming together with said tubular slide an annular space; a deflecting cone with a conical face, said deflecting cone being located under said inlet opening, having a base of a diameter exceeding the diameter of said inlet opening, and serving as a guide for said tubular slider which surrounds said deflecting cone, said tubular slider having a lower end face which is closed and an upper edge which abuts against said sealing face in said closed position and is substantially flush with said conical face of said deflecting cone in said open



position, and said sealing face being located above said inlet opening; means for supporting said deflecting cone and located in said annular space, said means for supporting said deflecting cone

including a plurality of tubular supporting members arranged so that a working medium is supplied through the interior of at least one of said tubular supporting members to said pneumatic means.

4,461,452

VALVE ASSEMBLY FOR A PRESSURE-COOKER

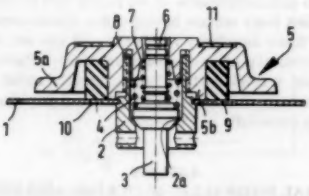
Jürgen Krejza, Kuchen, Fed. Rep. of Germany, assignor to Wurttembergische Metallwarenfabrik, Geislingen, Fed. Rep. of Germany

Filed Apr. 23, 1981, Ser. No. 256,681

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1980, 3016504

Int. Cl.³ F16K *51/00*

U.S. Cl. 251—144 **4 Claims**



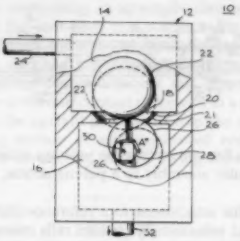
1. A valve assembly for a pressure cooker comprising a cooking valve mounted on a pressure cooker cover, a vent opening in the cover, an adjustable cap which is located on the cooking valve and is manually adjustable during use towards and away from the cover, and a closure body which is secured to the cap between the cap and the cover to cooperate with the vent opening, the closure body being in the form of a seal of resilient material which can be compressed by manual adjustment of the cap to a cooking position to close the vent opening, and which can deform when pressure builds up during use to allow automatic release of excess pressure through the vent opening, and the cap being manually adjustable to lift the seal and thus open the vent opening for pressure relief.

4,461,453

VALVE FOR FLUID SYSTEMS

Wesley P. Wilson, P.O. Box 395, Phelan, Calif. 92371

Continuation of Ser. No. 297,108, Aug. 28, 1981, abandoned.
This application Nov. 12, 1982, Ser. No. 440,795
Int. Cl.³ F16K 31/52
U.S. Cl. 251—251 7 Claims



1. A valve for the control of fluid flow, including:

a body portion, said body portion having an inlet chamber and an outlet chamber, said inlet chamber having an inner transverse dimension, said outlet chamber having a wall;

a seating region interposed between said inlet chamber and said outlet chamber and having an opening therethrough for permitting fluid flow between said inlet chamber and said outlet chamber;

a ball residing in said inlet chamber and having a diameter and a cross-sectional shape corresponding to the size and cross-sectional shape of said opening in said seating region;

said diameter of said ball being substantially less than said inner transverse dimension of said outlet chamber;

said ball being movable from a position in engagement with and closing said opening in said seating region to a position, within said inlet chamber, significantly spaced from said opening;

whereby fluid may flow freely from said inlet chamber to said outlet chamber;

shaft means rotatably supported in said wall of said outlet chamber below said seating region and having an operating portion thereof extending through the wall of said outlet chamber;

cam means, including a camming surface, eccentrically supported from said shaft;

said camming surface being continuous and being non-concave throughout the extent thereof and having a quasi-elliptical shape;

said camming surface being in direct contact with said ball through an arcuate rotational path in all operative positions of said camming surface, to prevent sticking of said ball on said seating region whereby upon rotation of said shaft means said ball is moved smoothly and gradually by said camming surface as said camming surface moves through said arcuate path and as said ball moves from a position in engagement with and closing said opening in said seating region to a position removed from said opening in said seating region.

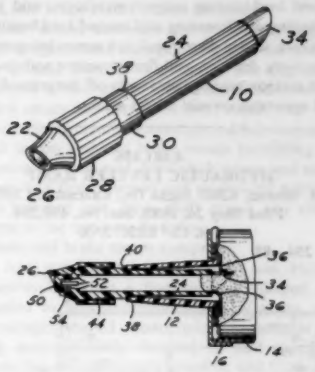
4,461,454

CAULKING TUBE VALVE

Kenneth Vadnais, Livonia, Mich., assignor to New Product, Inc., Southfield, Mich.

Filed Jun. 1, 1982, Ser. No. 383,545
Int. Cl.³ B67B 7/24
U.S. Cl. 251—350 10 Claims

1. A two piece valve to control the flow of viscous materials comprising an elongated barrel including a central opening and piercing means at one end of the barrel; and a cap mounted on the barrel and spaced from the piercing means and movable relative to the barrel between a sealing position wherein fluid flow between said barrel and said cap is sealed close and on an open position wherein there is fluid communication between said barrel and said cap, said cap having a nozzle end with an opening therethrough, said barrel including a dome and a cylindrical skirt extending therefrom and a plurality of legs



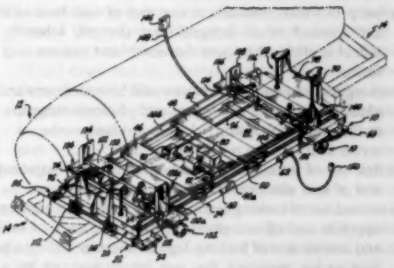
extending from said skirt to said barrel to define openings for fluid flow between said barrel and said cap, said dome extending substantially through said nozzle end of said cap to eject from said nozzle end substantially all material therein when said cap is in said sealing position.

4,461,455

AIRCRAFT ENGINE LIFTING AND POSITIONING APPARATUS

Charles J. Mills, Bellevue, and Steven E. Tracy, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash. and Aero-Go, Inc.

Filed Sep. 30, 1981, Ser. No. 307,177
Int. Cl.³ B60P 1/04
U.S. Cl. 254—3 R 6 Claims



1. A lifting and positioning apparatus for stress-critical mounting of an object such as an aircraft engine, comprising:

a first load-bearing support structure having fluid cushion bearing means for movably supporting said first support structure on a smooth ground surface;

a second load-bearing support structure superposed on first structure, said second load-bearing support structure supporting a plurality of resiliently yieldable lifting means adapted to support and raise an object such as an aircraft engine at a plurality of locations distributed horizontally,

said respective lifting means applying lift forces independently to the object and being independently actuatable to vary such lifting forces relatively, thereby to vary the angular orientation of said object to said support structure;

downwardly depending wheel means affixed to said second structure; and,

bi-directional jack means extending between said first and second load-bearing support structures, said jack means for raising and lowering said second load-bearing support structure, said bi-directional jack means being operable for selectively drawing said first structure and its associated fluid cushion bearings upwardly off the ground to support said apparatus on said wheel means.

4,461,456

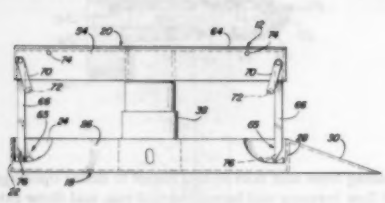
HYDRAULIC LEVELER RAMP

Rocco M. Munna, 42807 Sachs Dr., Lancaster, Calif. 93534

Filed May 26, 1983, Ser. No. 498,294

Int. Cl.³ E02C *3/00*

U.S. Cl. 254—88 **6 Claims**



1. A leveling device for parked vehicles, comprising:

a base structure adapted to be positioned on a fixed surface, said base structure formed having a recessed storage area therein;

a platform structure adapted to support a wheel of a vehicle to be raised by said platform, said platform being arranged to be received in said recess of said base structure in a substantially flat compact manner, so as to allow for a closed collapsible mode when said vehicle is to be positioned thereon prior to raising said platform;

a lift means interposed between said base and said platform structure, whereby said platform structure is allowed to be selectively raised to a height wherein said vehicle is leveled to a horizontal position;

a ramp member mounted at one end of said base structure and formed as an integral part thereof, whereby said wheel is allowed to pass thereover and rest on said platform;

locking means mounted between said base structure and said platform structure to prevent said platform structure from accidentally collapsing when in a raised mode;

wherein said locking means comprises:

a first set of locking-leg members positioned adjacent one end of said platform structure;

a second set of locking-leg members positioned adjacent the opposite end of said platform structure, each of said first and second sets of locking-leg members including a pair of locking-leg members that are interconnected by a rod, whereby said legs of said set rotate together with said rod;

latching means attached to said rods of said sets, whereby said locking legs are latched in a closed position when not in use, said latching means adapted to be manually operated to a released position so that said pairs of leg members are free to rotate downwardly together; and

a plurality of locking-bar members mounted to said base member, each of said locking-bar members being positioned to engage a respective locking-leg member, as said leg members rotate downwardly when said platform is raised.

4,461,457

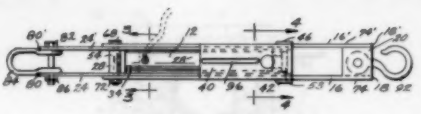
PUSH TO PULL FORCE CONVERTER

Elmer Steele, 2735 Headleys Mill Rd., SW. Rte. 1, Pataskala, Ohio 43062

Filed Apr. 21, 1982, Ser. No. 370,353

Int. Cl.³ B66F *11/04*

U.S. Cl. 254—93 R **10 Claims**



1. Apparatus for converting the pushing action of a hydraulic piston-cylinder assembly to a pulling action, said apparatus comprising:

first means for attachment to a reference and defining first and second substantially parallel rails connected together adjacent first ends thereof;

second means for attachment to a workpiece and defining first and second substantially parallel bars, said bars defining first and second opposed elongated slots;

said second means further including guide means connecting together said bars and in operative relationship with said bars and said rails for slidably positioning and guiding said first rail and said first bar in face-to-face relationship with respect to each other and for slidably positioning and guiding said second rail and said second bar in face-to-face relationship with respect to each other;

piston-cylinder assembly receiving means in operative relationship with said first means and with said second means for receiving and supporting a piston-cylinder assembly and for enabling said first and second means to move relative to one another to shorten the combined length of said first and second means in response to a pushing action of said piston-cylinder assembly, and wherein said piston-cylinder assembly receiving means include a support structure attached to said rails, slidably positioned within said slots and located between said bars for receiving one end of said piston-cylinder assembly.

4,461,458

LOW EFFORT DIGGING AND LIFTING TOOL

Charlemagne Poulin, 1432 Defense Hwy., Gambrills, Md. 21054

Filed Dec. 9, 1982, Ser. No. 448,315

Int. Cl.³ A01B *1/02*

U.S. Cl. 254—131.5 **10 Claims**

1. A tool for digging and lifting with reduced effort and fatigue comprising a shovel-like tool body having a forward blade and rearwardly extending handle shaft fixed to the blade, a foot plate spaced from the tool body and having a forward end depending cleat element adapted to penetrate the ground in response to downward pressure whereby the foot plate assumes a level position in contact with the ground surface and resists rearward displacement, a substantially rigid connecting rod interconnecting the tool body and foot plate and having a

first pivotal connection with the tool body near and rearwardly of said blade and near the lower end of the handle shaft and a second pivotal connection with the foot plate near the forward end of the foot plate and near the plane defined by the foot plate, the axes of said pivotal connections being parallel and across the axis of said handle shaft of the tool body, and the handle shaft and connecting rod lying in a common vertical plane during normal use of the tool, said second pivotal connection further comprising an upwardly disposed body member secured to the foot plate and having a flat upper surface and an end member on said rod pivotally connected to said body member, said end member further having a flat lower surface located oppositely adjacent said upper surface and being operable to tilt into contact therewith at a predetermined point less than the upright position to stop the upwardly rearward swinging motion of said connected rod while freely permitting said connecting rod to swing forwardly on said stopping point.

4,461,459

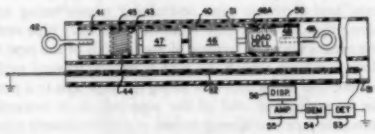
METHOD AND APPARATUS TO MEASURE TENSION IN A PULL LINE FOR CABLE

Allen C. Conti, 5294 E. 117th St., Garfield Heights, Ohio 44125

Continuation-in-part of Ser. No. 346,386, Feb. 5, 1982. This application Aug. 5, 1982, Ser. No. 405,385

Int. Cl.[3] **G01L** *5/04*

U.S. Cl. 254—134.3 FT **17 Claims**



1. Apparatus to indicate tension imposed on a cable while advanced along a cable duct, said apparatus including the combination of:

a pull line for moving said cable along said cable duct,

tensioning means for moving the pull line along said cable duct,

a housing and attachment means,

means disposed in said housing responsive to the tension imposed on said attachment means for generating an electrical signal which varies with the tension imposed by the pull line on the cable,

said housing and said means disposed within said housing being connected by said attachment means between said cable and said pull line,

means responsive to said electrical signal for producing a tension signal for transmission to a distally-spaced detection site,

detector means for detecting said tension signal at said distally-spaced detection site, and

a conductor means extending in a generally parallel relation with said duct for delivering said tension signal to said detector means.

4,461,460

WINCH

Thomas M. Telford, Gladstone, Oreg., assignor to Warn Industries, Inc., Kent, Wash.

Filed Aug. 10, 1982, Ser. No. 406,778

Int. Cl.[3] **B66D** *1/22, 5/20*

U.S. Cl. 254—344 **23 Claims**

1. A winch comprising:

(a) a hollow cable winding drum rotatable about a longitudinal axis;

(b) reversible motor means disposed longitudinally of a first end of said drum;

(c) power transmission means operably connected to said drum and disposed longitudinally of an opposite second end of said drum, said power transmission means including drive shaft means extending longitudinally through the interior of said drum toward said first end of said drum;

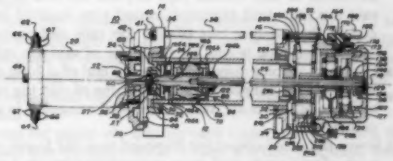
(d) brake-clutch means disposed within said drum and operably interconnecting said motor means with said drive shaft means, said brake-clutch means including:

(1) brake means automatically frictionally engageable directly against and disengageable from the inside diameter of said drum in response to the magnitude and direction of the torque load transmitted between said motor means and said drive shaft means; and

(2) overrunning clutch means disposed between said drive shaft means and said brake means permitting relative rotation between said drive shaft means and said brake means in a first direction and preventing relative rotation between said drive shaft means and said brake means in the opposite direction;

(e) wherein said brake means comprises:

(1) at least one friction ring assembly, said friction ring assembly including a frustoconically-shaped mandrel coupled to said overrunning clutch means, a correspondingly shaped frustoconical expandable friction ring antirotationally coupled to said mandrel, and means for antirotationally coupling said friction ring to said mandrel to prohibit relative rotation while allowing relative longitudinal movement between said friction ring and said mandrel; and



(2) actuator means responsive to the magnitude and direction of the torque acting on said drive shaft means for expanding said friction ring against the inside diameter of said drum and for contracting said friction ring away from the inside diameter of said drum depending on the magnitude and direction of the torque load transmitted between said motor means and said drive shaft means; and

(f) wherein said actuator means includes a cam member antirotationally coupled with said motor means, said cam member having an axially facing cam surface, and a cam follower antirotationally coupled with and axially slidable along said drive shaft means, said cam follower coacting with said cam member to:

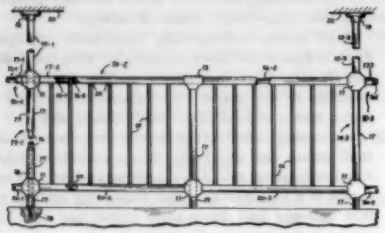
(1) slide axially toward said friction ring assembly when the torque load is being transmitted between said motor means and said drive shaft in a first direction to thereby urge said friction ring and said mandrel towards each other to expand said friction ring against the inside diameter of said drum means; and

(2) slide axially away from said friction ring assembly to allow said friction ring and said mandrel to shift longitudinally away from each other thereby to enable said friction ring to contract away from the internal diameter of said drum.

4,461,461
NON-CORROSIVE SECURITY RAILING

Lee Caron, 1310 Noble, Longwood, Fla. 32750

Filed Sep. 27, 1982, Ser. No. 423,531
Int. Cl.³ E04H 17/14
U.S. Cl. 256—19 9 Claims



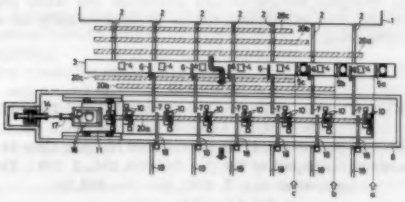
1. A security railing comprising:
- a plurality of railing sections, each of said sections formed from a first polyvinyl chloride pipe and a second polyvinyl chloride pipe, said second pipe having an outside dimension essentially equal to the inside dimension of said first pipe, said second pipe inserted into said first pipe;
- a plurality of posts, each formed from one of said railing sections;
- a plurality of horizontal top rails, each formed from one of said railing sections;
- a joint between adjacent ones of said top rails formed by extension of said second pipe beyond the end of one of said top rails, said extended second pipe inserted into an end of the adjacent one of said top rails and contacting said second pipe in said adjacent one of said top rails;
- a T connector joint disposed at the top end of at least one of said posts for connecting an end of one of said top rails to said one of said posts, said top rail end cemented in said T connector;
- a lower rail cross connector disposed near the lower end of each of said posts, said cross connectors cemented to said posts;
- a plurality of horizontal lower rails formed from polyvinyl chloride pipe, one of said lower rails disposed between each adjacent pair of said posts, said lower rail connected to said post by said cross connector, said lower rails cemented to said cross connectors; and
- a plurality of vertical rail members formed from polyvinyl chloride pipe having a dimension less than the inside dimension of said second pipe, said horizontal top rails having a plurality of holes through the lower surface thereof and said horizontal lower rails having a plurality of holes through the upper surface thereof, said holes complementary to said holes in said top rails, one of said vertical rail members inserted into each pair of said complementary holes.

4,461,462
APPARATUS FOR COOLING STEEL PIPE

Nobuyuki Mizushima; Kyohei Murata; Hiroshi Tamaki; Junichi Hayashi, and Fujio Ohkubo, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 17, 1982, Ser. No. 442,438
Claims priority, application Japan, Nov. 18, 1981, 56-183639
Int. Cl.³ C21D 1/63
U.S. Cl. 266—117 9 Claims

1. An apparatus for cooling at least the inside of steel pipes of various lengths by passing a coolant through the pipes, comprising:
- a plurality of stop means spaced at intervals in a straight line in the direction of the length of a pipe to be cooled for selectively stopping one end of the pipe which is moved axially of the pipe axis toward said stop means at the position of one of said stop means;
- pipe moving means for moving the pipe which is delivered from a pipe heat treatment means axially of the pipe toward said stop means;
- a plurality of stationary pipe restraining means for restraining the pipe from radial expansion and movement laterally of the pipe axis, said stationary pipe restraining means being spaced in a straight line along the axis of the pie at the same intervals as between said stop means and there being a stationary pipe restraining means spaced in the direction of the axis of the pipe from the position of each stop means a short distance relative to the size of said intervals;

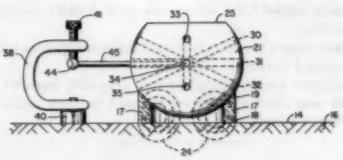


- a movable pipe restraining means for restraining the pipe from radial expansion and movement laterally of the pipe axis, said movable pipe restraining means being spaced along the axis of the pipe from the stationary pipe restraining means which is farthest along the axis of the pipe in the direction from which the pipe is moved toward said stop menas, and being movable along the pipe axis to a position for engaging the end of the pipe which is toward said movable pipe restraining means at a point closely adjacent said end of the pipe; and
- nozzle means on said movable pipe restraining means and being positioned for being directed into said pipe for directing a cooling fluid into the pipe when said movable pipe restraining means engages said pipe.

4,461,463
THREE-AXIS SPHERICAL GIMBAL MOUNT

Shigeo Okubo, Menlo Park, Calif., assignor to Design Professionals Financial Corporation, Monterey, Calif.

Continuation of Ser. No. 206,317, Nov. 12, 1980, abandoned.
This application Feb. 18, 1983, Ser. No. 467,706
Int. Cl.³ B23Q 3/04
U.S. Cl. 269—60 8 Claims



1. An apparatus for providing a surface angularly adjustable with respect to a reference surface, said apparatus comprising:
- a magnetizable mount in the shape of a sphere having a selected surface region thereon;
- magnetic holding means disposed between the mount and the reference surface for magnetically adhering the mount to the reference surface with sufficient holding force to provide a stable non-resonant structure while permitting said mount to be manually adjusted about three axes of rotation; and
- adjustment means for angularly positioning the mount about three axes with respect to the magnetic attachment means,

said adjustment means including a plurality of openings entering into the mount from different angular locations on the surface of the sphere and a rod-shaped member adapted to be removable fitted into said openings for manual adjustment over a wide range of angles about said three axes.

4,461,464

SHEET, OR STACKED SHEET HANDLING APPARATUS

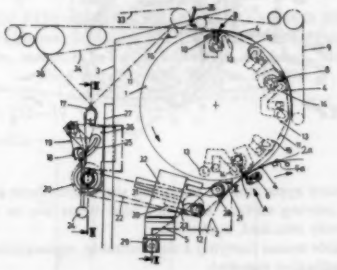
Godber Petersen, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Sep. 22, 1982, Ser. No. 421,479

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1981, 3143242

Int. Cl.³ B42C *1/04*

U.S. Cl. 270—47 **9 Claims**



1. Sheet handling apparatus having

a rotating first cylinder (2);

means (2a) retaining a substrate web on said first cylinder;

a rotating sheet handling cylinder (1), located to form a contact line (A) with said first cylinder;

sheet handling and transfer means (6) transferring a substrate, in sheet form, to said sheet handling cylinder;

holding means (7, 9) retaining at least a leading edge of the sheet on the circumference of the sheet handling cylinder for transport of the sheet thereon;

and comprising, in accordance with the invention

means for removing the sheet from surface contact with the circumference of the sheet handling cylinder (1) including

an endless conveyer belt system including a plurality of parallel conveyer belts (11);

conveyer belt guide means (13, 14, 15) located within, and closely adjacent to the circumferential contour of the sheet handling cylinder (1) and rotating with said sheet handling cylinder;

an external guide means (16) located outside of the circumference of said rotating sheet handling cylinder, having said conveyer belts passing thereover, and positioned to guide the conveyer belts in essentially tangential direction with respect to the circumference of the sheet handling cylinder at the exit line of the belts from the interior of said handling cylinder, for

guiding the sheets and removal by the belts (11) of the belt system as the belts leave the interior of the handling cylinder and are guided towards said external guide means (16).

4,461,465

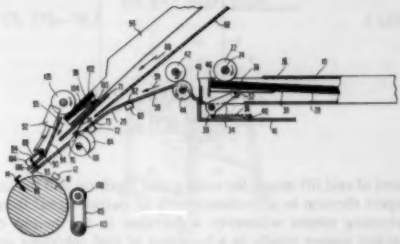
FACSIMILE SHEET FEEDING APPARATUS

G. William Hartman, Jr., Longwood, and Ronald F. Schley, Ocoee, both of Fla., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 120,337, Feb. 11, 1980, abandoned. This application Oct. 26, 1981, Ser. No. 315,222

Int. Cl.³ B65H *3/30*

U.S. Cl. 271—22 **10 Claims**



1. Facsimile apparatus comprising scanning means adapted to scan a sheet and improved sheet transport means comprising:

sheet storage means adapted to receive a stack of sheets;

corner separater means engaging at least one corner of the uppermost sheet in said stack;

scuff roller means adapted to contact the uppermost of said sheets in said stack and to move said sheets into a transport path;

at least two transport rollers adapted to move one of said sheets into said transport path, one of said transport rollers adapted to contact one of said sheets on one side of said path and another of said transport rollers adapted to contact said one of said sheets on another side of said path; and

means for positively driving each transport roller such that said one transport roller rotates in a first rotational direction and said another transport roller rotates in a second rotational direction, said one transport roller also rotating at a different peripheral speed from said another transport roller so as to accelerate one sheet with respect to another sheet when two sheets are simultaneously located between said transport rollers.

4,461,466

PAPER FEEDING DEVICE FOR RECORDING APPARATUS

Tohru Uchida; Shigehiro Suzuki; Tatsuo Yajima, and Yutaka Seto, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1982, Ser. No. 350,427

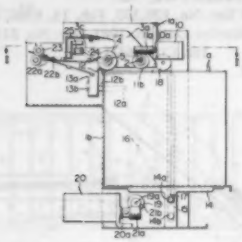
Claims priority, application Japan, Mar. 12, 1981, 56-34510

Int. Cl.³ B65H *3/32*

U.S. Cl. 271—22 **4 Claims**

1. In a paper feeding device of the type used for feeding stacked paper to an electrophotographic copying machine, a frame including a pair of vertically extending spaced side members, a subframe comprising a pair of interconnected end plates, a shaft extending between said side members and swingably supporting the end plates of said subframe for vertical reciprocal motion relative to said frame, a paper feeding roller, a second shaft extending between said end plates supporting said paper feeding roller, a platform holding a stack of paper, lift means for raising and lowering said platform and in its raised position urging the top paper of said stack into contact with said paper feeding roller, a movable plate having a seating surface, means urging said plate so that said seating surface contacts said paper feeding roller forward of its contact with said paper in the direction of travel of the latter, whereby said

paper is fed forwardly by said roller into the nip between said roller and said seating surface, means on said frame detecting the vertical position of said swingable subframe and the feeding roller supported thereby, and means controlling the move-



ment of said lift means for raising said platform and the stacked papers thereon in accordance with an output signal from said detecting means whenever a decrease in the height of the stacked papers results in a lowering of said subframe and the feeding roller carried thereby.

4,461,467

STRAND LENGTH FOR CONVEYING AND SLOWING DOWN FOLDED PRODUCTS

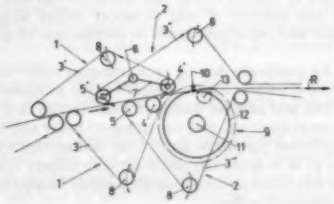
Rudolf Herb, Bobenheim, Fed. Rep. of Germany, assignor to Albert-Frankenthal AG, Frankenthal, Fed. Rep. of Germany

Filed Nov. 20, 1981, Ser. No. 323,683

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1980, 3049595

Int. Cl.³ B65H *29/66*

U.S. Cl. 271—202 **7 Claims**



1. A strand length for conveying and slowing down folded products between two consecutive stations of a folding apparatus, particularly between a folding cylinder and a folding sword or a delivery station, having

at least two consecutive strand sections driven in the same direction at opposingly stepped speeds, each strand section including an upper and lower belt set having a plurality of parallel belts in each set spaced apart from each other at least the distance of a belt and said belts in said strand sections being staggered,

at least one forward and one rear belt roller in the conveying direction for each of said belt sets, the forward belt roller of the rear, faster upper belt set and the rear belt roller of the forward, slower upper belt set being adjustable for height about the same axis,

said consecutive strand sections overlapping each other in their end regions by the dovetailing by means of said spaced apart staggered belts of the forward part of the upper and lower belt sets of the rear section with the rear part of the upper and lower belt sets of the forward section defining a common transport plane,

such that the forward upper and lower belt rollers of the rear strand section are encompassed within the loops defined by the upper and lower belt rollers of the forward strand section and the rear upper and lower belt rollers of the forward strand section are encompassed within the loops defined by the forward upper and lower belt rollers of the rear strand section, and

said forward and rear upper belt rollers of said rear and forward strand sections respectively are spaced apart a distance greater than the corresponding lower belt rollers of said rear and forward strand sections.

4,461,468

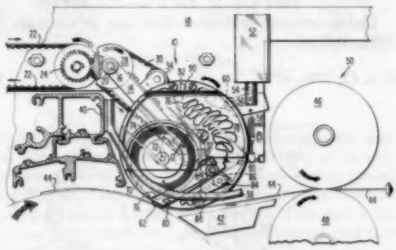
AUTOMATIC APPARATUS FOR LIFTING AND SEPARATING SHEET ITEMS FROM THE SURFACE OF AN ELECTROPHOTOGRAPHIC DRUM

Emmett B. Peter, III, Orlando, and Wilson P. Rayfield, Longwood, both of Fla., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sep. 23, 1982, Ser. No. 422,292

Int. Cl.³ B65H *29/56*

U.S. Cl. 271—308 **10 Claims**



1. Rotary apparatus for removing sheet items from a continuously moving surface to which said items are or may be attractively attached, comprising:

rotatable means carrying a demountable, replaceable supply of adhesive material;

drive means for rotating said rotatable means;

epicyclic means operably connected to said drive means for incrementally advancing said adhesive material from said supply to a take-up receptacle into which said adhesive is deposited at random in synchronism with the rotation of said drive means; and

signal responsive means for selectively imparting vertical up and down movement to said rotatable means in synchronism with the feeding of said adhesive material effective to bring a portion of said adhesive material into momentary contact with a sheet item so as to lift said item and detack the same from the surface to which it has adhered.

4,461,469

BALL COURT WITH MULTIPLE REBOUND SURFACES

William Henson, 1235 McKeel St., Yorktown Heights, N.Y. 10598

Filed Feb. 17, 1982, Ser. No. 349,623

Int. Cl.³ A63B *63/00*

U.S. Cl. 272—3 **29 Claims**

29. A court for a ballgame, comprising;

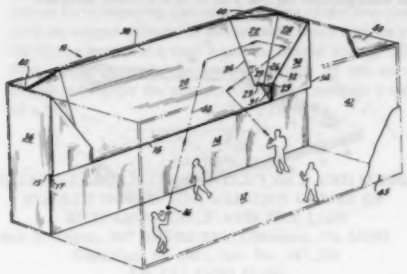
a horizontal surface for players to stand upon;

a vertical wall upstanding from the horizontal surface at the front of the court;

an upstanding, inclined wall extending above the vertical wall and being inclined forward away from the horizontal surface on which the players stand; the inclined wall having opposite left and right side ends;

at each of the left and right ends of the inclined wall and also above the vertical wall, at least one upstanding flat panel having a rebound surface being provided; each panel being turned at an angle out of the plane of the vertical wall so that its rebound surface generally faces toward the

opposite panel rebound surface and respective side of the court, each panel being turned at an angle, inclined forwardly of the court, and outwardly with respect to the vertical so that a ball striking that panel will rebound both generally toward the opposite side of the court and rearwardly away from the vertical wall.

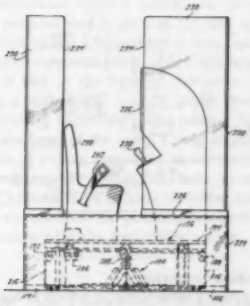


4,461,470

SYSTEM FOR ADDING REALISM TO VIDEO DISPLAY

Gary D. Astroth, St. Louis, and Allen F. Miller, St. Peters, both of Mo., assignors to Mark E. Astroth, St. Louis, Mo.

Filed Jun. 20, 1983, Ser. No. 505,876
Int. Cl.³ A63G *31/02, 31/16*
U.S. Cl. 272—17 **25 Claims**



1. A video controlling and viewing system which comprises a base unit that is intended to remain stationary throughout use of said system, a platform which is adapted to be moved during use of said system, mounting means intermediate said base and said platform to permit said platform to be moved relative to said base, a video screen mounted on and movable with said platform, control means operable by a user of said system to control movement of said platform and also to control movement of the view on said video screen, said platform having an area thereon wherein said user of said system can manipulate said control means while said platform simultaneously moves said video screen and said user of said system, and driving means to provide movement of said platform which, at least in part, occurs during movement of said view on said video screen, said driving means including a cable and a drum and a motor, said cable extending between said base and said platform and responding to rotation of said drum to cause tilting of said platform relative to said base, said motor being responsive to movement of said control means to drive said drum, said drive means responding to movement of said control means in a predetermined direction to cause said drum to rotate in a given direction and responding to movement of said control means in the opposite direction to cause said drum to rotate oppositely of said given direction.

4,461,471

WALKER

Carl H. Brastow, Foxboro, Mass., assignor to White Cap Enterprises Corporation, Hull, Mass.

Filed May 3, 1982, Ser. No. 374,003
Int. Cl.³ A61H *3/04*
U.S. Cl. 272—70.3 **1 Claim**

1. A walker comprising spaced, parallel side frames, each side frame embodying a handrail and being provided with wheels for mobilization, a rigid crossbar having a straight intermediate portion throughout the major portion of its length and bent end portions, the ends of which are pivotally connected to the frame members, said crossbar defining a nest and said frame members being foldable into overlapping, generally parallel relation to each other and to the straight portion of the crossbar within the nest defined by the crossbar, a spreader bar having an intermediate portion throughout the major portion of its length comprised of straight telescoping sections and releasable locking means for holding the telescoping section distended to, in turn, hold the frame members in parallel relation, said spreader bar having end portions bent at angles such that when the spreader bar is distended, said bent end portions are parallel to the frame members, lever control means mounted to each of said frame members for braking and releasing the wheels, and a transmission member positioned transversely of the frame members with its ends operably connected to the lever control means operable to transmit actuation of the lever control means at one side to the lever control means at the other side and vice verse, said transmission member comprising articulated parts which permit folding of said frames into parallel relation without disabling the lever control means and including a rigid bar having a bent end and an articulated end wherein the bent end is pivotally connected to one of the lever control means and articulated means is pivotally connected at one end to the bar and pivotally connected at the other end to the lever control means.

4,461,472

EXERCISE DEVICE BENEFICIAL TO THE METATARSAL ARCH

Rosendo Martinez, 790 Prigge Rd., St. Louis, Mo. 63138

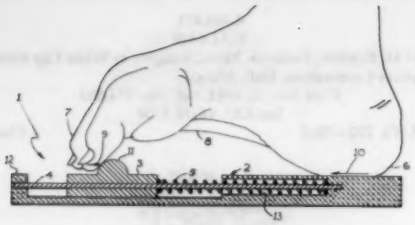
Filed Dec. 27, 1982, Ser. No. 438,274
Int. Cl.³ A01B *23/04*
U.S. Cl. 272—96 **1 Claim**

1. A foot exerciser for the metatarsal arch comprising:

a housing having a rearward generally flat heel support surface, a forward upright flange and a central recessed slide support section, guide means extending between said heel support and said upright flange,

a toe engaging member positioned in said central recessed slide support section slideably mounted on said guide means and including a raised transverse rib means adapted to be frictionally engaged by the underside of a user's toes,

said toe engaging member being slideably mounted for linear movement toward and away from said heel support,



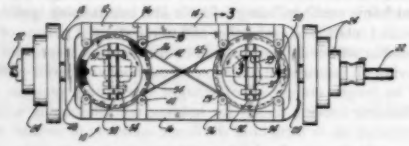
and means biasing said toe engaging member away from said heel support member.

4,461,473

WEIGHTLIFTING APPARATUS

John W. Cole, 32343 Concord Dr., Madison Heights, Mich. 48071, assignor to John Cole and Steve Shuk, both of Sterling Heights, Mich.

Filed Mar. 1, 1982, Ser. No. 353,553
Int. Cl.³ A63B *13/00*
U.S. Cl. 272—123 **29 Claims**



12. Weightlifting apparatus, comprising:
a frame including means adapted for mounting weights on said frame;
a pair of spaced apart handle means;
means for rotatably mounting said handle means on said frame; and
means interconnecting said handle means for synchronizing the rotation of said handle means,
said handle means each including a ring member and said synchronizing including an elongate flexible element trained around the peripheries of the ring members and secured to at least one of the ring members.

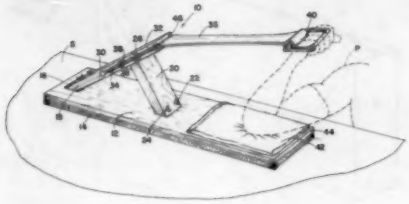
4,461,474

ARM WRESTLING EXERCISER

Albert R. Retzlaff, 1006 Terrace Dr., Napa, Calif. 94558

Filed May 16, 1983, Ser. No. 495,044
Int. Cl.³ A63B *21/04*
U.S. Cl. 272—139 **5 Claims**

1. An arm wrestling exerciser including:
a relatively flat base board;
an upright stationary anchor post of standard lumber secured at its lower end to said base board near one end thereof and being inclined toward the other end thereof;
a support brace inclined toward said anchor post but not secured thereto to form an A-frame therewith and resist downward loads therefrom;
releasable means securing said anchor post and said support brace to said base member;
an elongated band of elastomeric material forming a stretchable tension member; and
complementary means on said anchor post and one end of said tension member for releasably securing said one end to said anchor post at a selected one of at least two elevations to extend over an edge of said anchor post at the upper end thereof and toward the other end of said base member;
said complementary means comprising;
an enlargement on one end of said tension member;



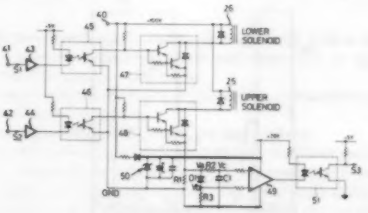
at least two horizontal bores through said anchor post at different elevations to receive said enlargement selectively; and
slots opening into said bores through which said band may extend.

4,461,475

GAME MACHINE HAVING POP-UP TARGET

Masaya Nakamura, Tokyo, Japan, assignor to Namco Limited, Tokyo, Japan

Filed Jan. 5, 1982, Ser. No. 337,214
Claims priority, application Japan, Apr. 14, 1981, 56-55041
Int. Cl.³ A63F *9/00*
U.S. Cl. 273—1 GC **7 Claims**



1. A game machine comprising:
a game stand having a table through which at least one hole extends;
a main shaft supported by bearings to be movable up and down and having a target heat portion at the upper end thereof so that the target head portion can pass through an associated one of said holes in the table;
a plunger of magnetic material and disposed partially on the periphery of the main shaft and extending in its axial direction;
solenoid means having at least one solenoid mounted to upwardly attract said plunger, the inner dimension of which enables the plunger on the main shaft to freely pass therethrough; and
a control circuit for controlling the energization and deenergization of the solenoid means, whereby the target head portion is caused to appear on the surface of the table and disappear therefrom, said control circuit having a switching circuit in series with a current path for the solenoid and a hitting detection circuit comprising (a) a resistor in series with the current path for the solenoid, (b) a first circuit connected to said resistor and arranged to provide an output voltage which is lower than the voltaga across the resistor by a predetermined level and is varied as the voltage across the resistor, (c) a second circuit connected

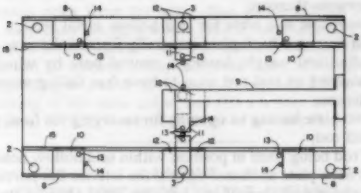
to said resistor and arranged to provide an output voltage which corresponds to the voltage across the resistor and is delayed with respect to an instantaneous level transition of the voltage across the resistor, and (d) a comparision circuit for comparing the output voltage of the first circuit with an output voltage of the second circuit and for producing an output at a time when the output voltage of the first circuit exceeds the output voltage of the second circuit whenever the comparison circuit outputs a signal of a hit.

4,461,476

BILLIARD TABLE WITH CENTER HOLE AND SLIDING POCKET DOORS FOR VARIOUS GAMES OF BILLIARDS, GOLF AND THE LIKE

Arthur L. Tudek, 507 Indiana Ave., Glassport, Pa. 15045

Filed Sep. 18, 1981, Ser. No. 247,239
Int. Cl.³ A63D *15/00*
U.S. Cl. 273—3 R **4 Claims**



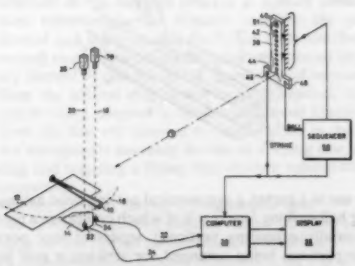
1. In combination with a rectangular pocket billiard table having six pockets, one at each of the four corners and two at opposite sides of the longitudinal center, each of the pockets having a hole communicating with a return means for leading the dropped ball to the head of the table; the improvement comprising a central hole slightly larger than a billiard ball in said table having underneath said central hole, a return tube leading to the head of the table, a plug to selectively plug said central hole, a sliding trap door underneath each of said six holes, and underneath said central hole, to selectively convert the pocket billiard table to a six or seven hole pocket billiard table wherein each of the pockets is selectively in or out of communication with the ball return means.

4,461,477

METHOD AND APPARATUS FOR IMPROVING THE PERFORMANCE OF A BATTER

Eddie A. Stewart, 3230 Healy Dr., Nashville, Tenn. 37207

Filed Jun. 14, 1982, Ser. No. 388,127
Int. Cl.³ A63B *71/02*
U.S. Cl. 273—26 R **9 Claims**



1. Apparatus for improving the performance of a batter by monitoring the response time of the batter and the velocity of a bat as it moves through a selected ball/bat impact zone comprising:

sequencing means to provide a sequencing light having first indicia representative of a ball moving towards said impact zone, and second indicia which appears subsequent to said first indicia to inform said batter whether said ball will pass through said ball/bat impact zone, and means to generate a first electrical signal at the appearance of said second indicia when said second indicia indicates said ball will pass through said ball/bat impact zone;

first and second means for providing first and second beams of light respectively which pass through said ball/bat impact zone, said first and second means being located such that said beams of light are at a selected and known distance apart and such that a bat swing through said impact zone sequentially interrupts both of said first and second beams;

first and second sensor means for receiving and sensing the presence of said first and second beams respectively thereon, and for providing second and third electrical signals representative of the interruption of said first and second beams;

circuitry for measuring a first elapse time between the occurence of said first and second electrical signals, said first elapse time corresponding to said response time of said batter, and for measuring a second elapse time between said second and third electrical signals, said second elapse time being relatable to said velocity of said bat as it moves through said ball/bat impact zone; and

means for displaying said first and second elapse time as a measure of said performance of said batter.

4,461,478

BOWLING BALL AND METHOD OF MANUFACTURE

Andrew J. Lee; Thomas E. Palmer, and Dorris K. Mason, all of Hopkinsville, Ky., assignors to Ebonite International, Inc., Hopkinsville, Ky.

Filed Jun. 14, 1982, Ser. No. 388,280
Int. Cl.³ A63B *37/14*
U.S. Cl. 273—63 R **29 Claims**

1. A bowling ball comprising a spherical core encapsulated in and bonded to an outer shell, molded in situ on the core, having a thickness of about 0.25 inch to about one inch, in which the outer shell is a homogeneous matrix of sulfur-vulcanized rubber, inert particulate filler, and partially cured polyurethane, the polyurethane constituting at least about two percent and no more than about ten percent by weight of the shell.

4,461,479

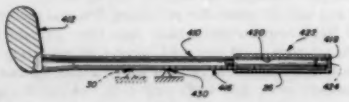
GOLF CLUB HAVING WEIGHTED HANDLE

Michael D. Mitchell, 200 N. Cardinal Ave., Addison, Ill. 60101

Continuation-in-part of Ser. No. 234,392, Feb. 13, 1981, abandoned. This application Mar. 1, 1982, Ser. No. 353,581
Int. Cl.³ A63B *53/14*
U.S. Cl. 273—81 A **12 Claims**

1. A golf club having a head that defines one end of said golf

club and has a first predetermined weight, a hollow shaft having one end secured to the head and a second end that defines the opposite gripping end of said golf club, and a relatively light-weight grip secured to said shaft adjacent to said opposite end of said golf club, said golf club having a balance point at a location intermediate the ends thereof, said gripping end incorporating additional solid weight means inserted therein, the outer surface of said additional solid weight means



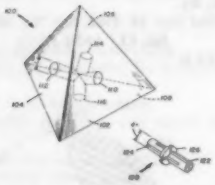
being in intimate contact with the inner surface of said hollow shaft over the length of said solid weight means, said additional solid weight means incorporating a flexible material on the surface thereof to minimize the existence of noise from said additional solid weight means and to absorb thermal and mechanical stresses occuring during use of the club, said weight means having an enlarged head portion abutting the second end of said golf club for fixedly maintaining said additional weight means in position without movement thereof.

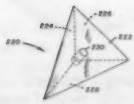
4,461,480

EDUCATIONAL ENTERTAINMENT DEVICE COMPRISING CUBES FORMED OF FOUR ¼TH OCTAHEDRON SECTIONS ROTATABLY COUPLED TO A TETRAHEDRON

Maurice E. Mitchell, 429 Tampico, Walnut Creek, Calif. 94598

Filed Sep. 30, 1982, Ser. No. 430,316
Int. Cl.³ A63F *9/08*
U.S. Cl. 273—153 S **12 Claims**





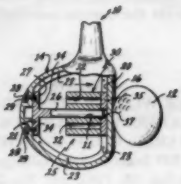
9. An educational device comprising:
at least one cube which comprises:
a regular tetrahedron;
four ¼th sections of a regular octahedron, wherein the faces of the octahedron are congruent with the faces of the tetrahedron and wherein each section comprises (a) one of the octahedron faces and (b) three orthogonal corner faces formed by slicing the octahedron by three orthogonal planes each plane of which passes through four octahedron vertices, each corner face lying along one of the orthogonal planes; and
means for rotatably coupling the octahedron face of each of the four ¼th sections to a corresponding one of the tetrahedron faces in a face-to-face relationship.

4,461,481

GOLF CLUB OF THE DRIVER TYPE

Sunyong P. Kim, 3160 W. 6th St. #635, Los Angeles, Calif. 90020

Filed Jan. 31, 1983, Ser. No. 462,354
Int. Cl.³ A63B *53/08*
U.S. Cl. 273—170 **2 Claims**



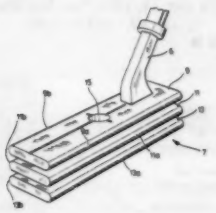
1. A golf club of the driver type comprising:
a hollow metal head having integrally formed thereon a front striking face and a rear wall having interior flat portions thereon;
a removable sole plate for said hollow metal head;
a rod having a back plate integrally formed thereon;
a cylindrical weight having a central bore by which it is mounted on said rod so as to have free sliding movement thereon;
a front plate having an opening for receiving the front end of said rod;
said rod being fixed in position within said hollow head with its back plate anchored against the interior flat portions on the rear wall thereof and with the front plate on the front end thereof anchored against the back of said striking face;
whereby when a golfer takes a full swing with the golf club to drive a ball, said weight freely slides on said rod so as to be positioned against the back plate integrally formed on the rear end thereof and upon impact of the striking face of the club head with the ball said weight is propelled to freely slide on said rod to hit the front plate anchored on the back of the striking face to provide an additional impact upon the ball thereby increasing the distance the ball travels.

4,461,482

MULTIPLE IMPACT PUTTER

Savo Bojicic, 2350 Bridletowne Circle #2309, Scarborough, Ontario, Canada M1W 3E6

Filed Aug. 24, 1982, Ser. No. 410,941
Int. Cl.³ A63B *69/36, 53/08, 53/04*
U.S. Cl. 273—183 D **11 Claims**



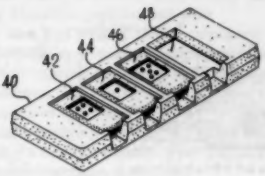
7. For use in a putter, a symmetrical putting head having two opposing ball striking faces each of which comprises a plurality of horizontally extending vertically separated face portions, said face portions being arranged for striking a golf ball in either one of a single face portion impact mode and a dual face portion impact made where adjacent face portions substantially simultaneously strike the golf ball to impart a vertical spin to the ball in both of said impact modes.

4,461,483

GAME APPARATUS EMPLOYING CARDS AND DICE

Warner Kopp, 1 Pleasant Valley Rd., Mendham, N.J. 07945

Filed Sep. 30, 1982, Ser. No. 432,132
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—265 **13 Claims**



1. A game apparatus for two players comprising (A) a card tray containing at least N compartments; (B) N dice cubes, each cube bearing six different indicia on its faces and being of a different color from the other dice cubes; (C) 6N playing cards, each card having a single indicia corresponding to one of the dice indicia thereon, with N cards exhibiting the same indicia; (D) N^2 colored cards, each card being of a single color corresponding to one of the colors of said dice cubes, with N cards being of the same color; and (E) a holder for at least N dice cubes, N being a whole number of at least three.

4,461,484

FLYING DISC ENTRAPMENT ASSEMBLY

Edward E. Headrick, 808 Bevins St., Unit 3, Lakeport, Calif. 95453

Filed Dec. 9, 1983, Ser. No. 559,709
Int. Cl.³ A63B *67/06*
U.S. Cl. 273—400 **9 Claims**

8. An entrapment assembly for use in a flying disc game for arresting and trapping a flying disc thrown against the assembly comprising:

(a) an upright post having a longitudinal axis;

(b) an upwardly opening annular basket mounted symmetrically on the post at an intermediate location;

(c) a circular support bracket mounted at the top of the post;

(d) a first ring mounted on the post within the basket;

(e) a plurality of outside chains having the upper ends thereof attached to the support bracket at spaced annular positions around the periphery thereof, and the lower ends thereof attached to the first ring at spaced annular positions around the periphery thereof, the outside chains being adapted to abort kinetic energy of the disc and reduce its velocity;

(f) a second ring mounted on the post at a location adjacent the upper end of the basket; and

(g) a plurality of inside chains having the upper ends thereof attached to the support bracket at spaced annular positions intermediate the distance between the periphery thereof and the post, and the lower ends attached to the second ring at spaced annular positions around the periphery thereof so that the inside chains extend outwardly and from the second ring to the support bracket, the inside chains being adapted to absorb additional kinetic energy from the disc and cause it to be deposited in the basket.

9. An entrapment assembly for use in a flying disc game for arresting and trapping a flying disc thrown against the assembly comprising:

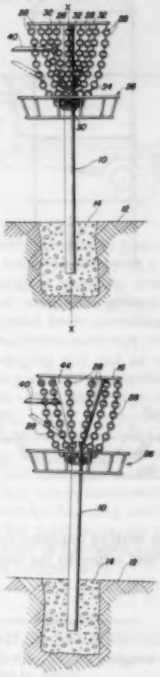
(a) an upright post having a longitudinal axis;

(b) an upwardly opening annular basket mounted symmetrically on the post at an intermediate location;

(c) a circular support bracket mounted at the top of the post;

(d) a ring mounted on the post within the basket;

(e) a plurality of outside chains having the upper ends thereof attached to the support bracket at spaced annular positions around the periphery thereof, and the lower ends thereof attached to the ring at spaced annular positions around the periphery thereof, the outside chains being adapted to abort kinetic energy of the disc and reduce its velocity; and



(f) a frusto conical deflection member mounted on the post within the outer chains and having its large end positioned adjacent the support bracket and its small end positioned adjacent the upper end of the basket for deflecting the disc in a direction to be deposited in the basket after the disc has impacted the outside chains.

4,461,485

METHOD AND APPARATUS FOR A GAME

Ronald F. Horvath, 1670 Echo La., Racine, Wis. 53406; John R. Reid, 2431 Blaine Ave., Racine, Wis. 53405, and Thad F. Elsmo, 208 East Four Mile Rd., Racine, Wis. 53402

Filed Feb. 4, 1982, Ser. No. 345,563
Int. Cl.³ A63B *65/08, 65/10*
U.S. Cl. 273—425 **4 Claims**

4. A flying toy comprising

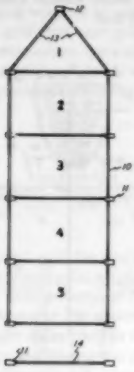
an aerodynamic disc having a flat disc portion and a downwardly depending flange portion, said disc having a centrally located opening extending therethrough

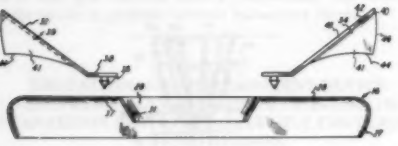
a plurality of wings mounted on said flat disc portion, said wings extending outwardly and upwardly from said opening to a point beyond the periphery of said disc,

each of said wings having a straight edge portion and a flap portion extending downwardly from said edge portion toward said disc,

said wings being mounted on said disc in such a manner that said disc may be launched with an imparted rotational motion resulting in said straight edge portions being the

leading edge of said wings and said flap portions being the trailing edge of said wings whereby a horizontal launch-





ing of said disc with an imparted rotation causes said disc to rise, hover and return to the launching point.

4,461,486

PISTON ROD SCRAPER AND BREATHER ASSEMBLY

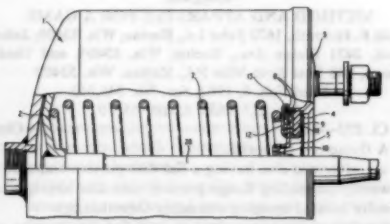
Geoffrey R. Tregonning, Chippenham, England, assignor to Westinghouse Brake and Signal Co. Ltd., Chippenham, England

Filed Jan. 14, 1983, Ser. No. 457,954

Claims priority, application United Kingdom, Jan. 29, 1982, 8202637

Int. Cl.³ F16J *15/32*

U.S. Cl. 277—24 **10 Claims**



1. A shaft scraper ring arrangement comprising a scraper ring and a supporting plate for the scraper ring, and means to support said plate with limited freedom of movement in a plane transverse to a shaft which is to be scraped, the means to support said plate comprising oil saturated support and filter pads and a housing assembly, the plate being freely located between the pads in the housing assembly.

4,461,487

STERN TUBE SEAL

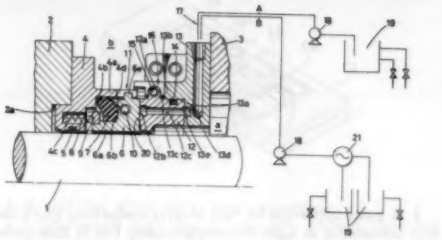
Sotosuke Matsumoto, Kawagoe, Japan, assignor to Eagle Industry Co., Ltd., Tokyo, Japan

Filed Mar. 9, 1983, Ser. No. 473,488

Claims priority, application Japan, Apr. 1, 1982, 57-52309

Int. Cl.³ F16J *15/40*

U.S. Cl. 277—74 **10 Claims**



1. A stern tube seal adapted to be disposed about a rotatable shaft, comprising a housing means disposed about said shaft, a first slidable ring on said shaft, said first ring being rotatable with said shaft, biasing means between said housing means and said first ring biasing said first ring in an axial direction, a second slidable ring disposed about said shaft, said second ring being non-rotatably mounted on said shaft, said first ring having a first sealing surface disposed generally perpendicularly to the axis of said shaft, said second ring having a second sealing surface disposed generally perpendicular to the axis of said shaft, said first and second sealing surfaces facing one another to provide a seal therebetween, said second ring having an annular groove opening onto said second sealing surface, said annular groove being disposed to receive liquid leakage between said first and second sealing surfaces, passageway means in said second ring leading from said annular groove, and conduit means in communication with said passageway means for receiving said leakage whereby said leakage is carried off by said conduit means.

4,461,488

SEAL FOR LINK OF TRACK CHAIN

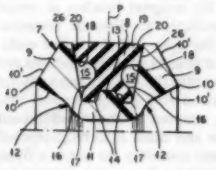
Hans W. Harms, Wuppertal, and Ditmar Reimann, Willich, both of Fed. Rep. of Germany, assignors to Intertractor Viehmann GmbH & Co., Gevelsberg, Fed. Rep. of Germany

Filed Jun. 24, 1983, Ser. No. 507,839

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1983, 3300288

Int. Cl.³ F16J *15/38*

U.S. Cl. 277—92 **11 Claims**



1. In a chain-track link assembly having:

a pin extending along and defining an axis;

an outer link element fixed to the pin and forming therewith an axially open annular recess having an annular end face lying substantially in a plane perpendicular to the axis and a radially inwardly directed cylindrical inner surface centered on the axis; and

an inner link element pivotal about the axis on the pin and having an annular end face substantially parallel to and axially confronting the end face of the outer link element; an annular seal in the recess between the end faces, centered on the axis and substantially axially symmetrical therearound, and comprising:

a relatively hard, resiliently deformable, and radially outwardly U-section part formed with

a pair of like legs having axially oppositely directed sides each formed by a pair of opposite inclined and axially oppositely tapered surfaces joining substantially at a line, the U-section part bearing axially against the end faces at the respective lines; and

a base axially bridging the legs and joined thereto at annular regions of a thickness smaller than the thickness of the legs radially outward therefrom; and

a relatively springy elastomeric seal part compressed axially between the legs of the outer part and formed with

a pair of axially oppositely directed sides engaging the respective legs of the hard seal part and formed with respective annular grooves open axially away from each other, whereby the legs do not engage the soft seal part at the grooves;

an outer surface that is substantially smooth and ungrooved in axially uncompressed condition of the spring seal part and radially outwardly grooved and forming a pair of ridges engaging the inner surface of the recess when axially compressed in the U-section part between the end faces.

4,461,489

BODY FRAME WITH A LIQUID TANK SECURED INTEGRALLY THERETO FOR A MOTORCYCLE

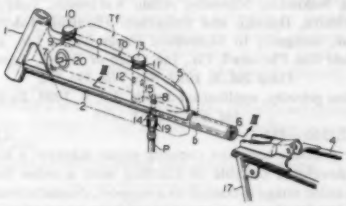
Kensuke Tsukiji, Asaka, and Yukiho Yamazaki, Higashiyamato, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 2, 1982, Ser. No. 414,076

Claims priority, application Japan, Sep. 3, 1981, 56-139150; Sep. 3, 1981, 56-139151; Sep. 18, 1981, 56-147047

Int. Cl.³ B60K *15/08*

U.S. Cl. 280—5 A **6 Claims**



6. A liquid tank construction for a motorcycle frame having a generally a vertical head pipe and a generally horizontal main pipe connected to said head pipe and extending rearwardly therefrom, said tank comprising:

A hollow gusset of generally inverted U-shaped cross section open at the front and bottom, the front opening of the said gusset being sealed to said head pipe and the bottom opening of said gusset being sealed to said main pipe to form a first holding chamber within said gusset;

said main pipe being sealed at both ends to form a second holding chamber; and

said main pipe having communication holes form therein between said first and second holding chambers, whereby said head pipe, said main pipe, and said gusset form a liquid-tight tank integral to said motorcycle frame.

4,461,490

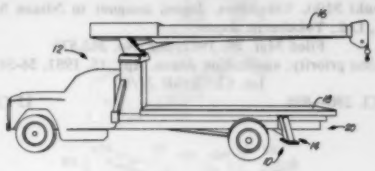
STRUCTURAL SUPPORT FOR OUTRIGGER

Raymond Fritel, and Garold L. McPeak, both of Olathe, Kans., assignors to RO Corporation, Olathe, Kans.

Filed Oct. 30, 1981, Ser. No. 316,656

Int. Cl.³ B60S *9/22*

U.S. Cl. 280—763.1 **12 Claims**



1. A mounting assembly for attaching an outrigger assembly to a truck frame, said truck frame having a platform mounted thereon and said outrigger assembly presenting a pair of spaced-apart, elongated, extensible, ground-engaging support members and an elongated beam extending between and secured to said support members, each support member having a lowermost, ground-engaging end and an uppermost, attachment end, said mounting assembly comprising:

bracket means for providing lateral support to said outrigger assembly, including a pair of laterally spaced bracket members secured to said truck platform, each bracket member presenting a support member-engaging web; and

means for securing said outrigger assembly to said bracket means including bolt means interconnecting said bracket means and said beam for disposing said beam adjacent said truck frame and for positioning the attachment end of each support member in operative engagement with the respective bracket member web.

4,461,491

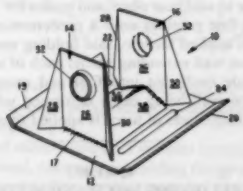
TRAILER SAND SHOES

Louis E. Eklund, Muskegon, Mich., assignor to Fleet Engineers, Inc., Muskegon Heights, Mich.

Filed Jul. 12, 1982, Ser. No. 397,128

Int. Cl.³ B60S *9/02*

U.S. Cl. 280—763.1 **7 Claims**



1. In a trailer sand shoe for use on the bottom of support legs on a trailer vehicle, the sand shoe comprising:

a rectangular metal base plate having a central portion;

metal side support plates rigidly fixed to said base plate and extending upwardly therefrom, each of said side support plates having a central web and side webs bent laterally of said central web, the central web being generally perpendicular to the base plate and having an opening therein at the top thereof for mounting the sand shoe to support legs of a trailer vehicle;

the improvement which comprises:

said base plate including an integral reinforcing portion formed from said base plate and comprising an upward deformation of said central portion extending perpendicularly between and above the bottom of said central webs of said side support plates and joined thereto, said deformation having side edges formed by slits in the base, the

side edges of the deformation abutting the central webs of the side support plates and extending to a height sufficient to rigidify the side support plates against lateral movement.

4,461,492

SEAT BELT ASSEMBLY

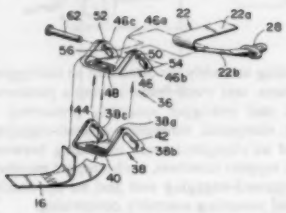
Hiroyuki Miki, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 30, 1982, Ser. No. 363,575

Claims priority, application Japan, Apr. 15, 1981, 56-56783

Int. Cl.³ B60R *21/00*

U.S. Cl. 280—806 **12 Claims**



1. A seat belt assembly for restraining a passenger on a seat of a motor vehicle, comprising:

first and second belts to be connected to different portions of said vehicle; and

a belt holder for holding said first and second belts in a manner to divide said second belt into a shoulder restraining section and a lap restraining section, said belt holder comprising a base plate fixed to said first belt and having spaced side walls which stand on a base portion of said base plate, said side walls being formed with respective elongate slots at positions facing each other; a shaft passing through said elongate slots to span said side walls, said second belt passing around said shaft, said shaft assuming selectively a first position wherein said shaft is freely rotatable about the axis thereof permitting said second belt to be freely movable longitudinally with rotation of said shaft, and a second position wherein said shaft tightly grips said second belt thereby fixing said second belt relative to said base plate; and means for holding said shaft in said first position until a predetermined magnitude of force is applied thereto, said holding means comprising a partition wall extending across each of said elongate slots to divide each slot into first and second sections, said partition wall being easily deformed when the predetermined magnitude of force is applied thereto by said shaft.

4,461,493

TENSION RELIEVING MECHANISM FOR A SEAT BELT RETRACTOR AND CONTROL MEANS THEREFOR

Gerald A. Doty, Crown Point, Ind., assignor to Gateway Industries, Inc., Hazel Crest, Ill.

Filed Feb. 2, 1982, Ser. No. 345,200

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—807 **24 Claims**

1. In a safety belt retractor, the combination comprising:

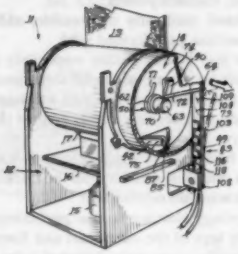
a rotatable reel having a belt wound thereabout for protraction and retraction from the reel;

spring means biasing the reel to retract to rewind the belt onto the reel;

a locking means for locking the belt against further protraction in times of an accident;

tension relieving means moveable between a release position in which the tension of the spring means is free to pull on the belt and to urge the reel to rewind the belt and an actuated position for relieving the belt of the force of said spring means and holding the reel against rewinding the belt;

control means for actuating said tension relieving means to its release position including a bimetallic member; and



an electrical circuit means for heating the bimetallic member and for deforming the same when the control means is actuating said tension relieving means to its release position.

4,461,494

PRESSURE SENSITIVE CARBONLESS COPYING SYSTEMS

Roger A. Penne, Beerzel, Belgium, assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 2, 1981, Ser. No. 269,436

Claims priority, application Belgium, Jun. 5, 1980, 200,897

Int. Cl.³ B41M *5/22*

U.S. Cl. 346—211 **4 Claims**

1. A sheet material on which a coating is applied and which is used for pressure-sensitive carbonless copying systems, in which the components responsible for colour development in the coating consist essentially of a mixture of (1) a predominantly white four-layer structured lamelar chlorite mineral which has been dry ground without any chemical or thermal treatment and (2) an activated montmorillonite clay, bentonite clay or smectite clay.

4,461,495

PRESSURE SENSITIVE COPYING PAPER

Yukiya Nakasato, Matsudo; Atsuo Kuramoto, Tokyo; Sadao Morishita, Ibaraki, and Shigetoshi Hiraishi, Tokyo, all of Japan, assignors to Mitsubishi Paper Mills, Ltd. and Mitsubishi Gas Chemcail, Co., Inc., both of Tokyo, Japan

Filed Jul. 8, 1982, Ser. No. 396,372

Claims priority, application Japan, Jul. 9, 1981, 56-107385

Int. Cl.³ B41M *5/16*

U.S. Cl. 346—211 **12 Claims**

1. A pressure sensitive copying paper wherein a layer of a color developer capable of reacting with a color former to form a color image is coated on a support, characterized in that said color developer comprises a mixture or reaction product of a polyvalent metal compound and a condensate obtained by reacting p-hydroxybenzoic acid and a p-alkylphenol having a C_1–C_{12} alkyl group with formaldehyde in the presence of an acid catalyst.

4,461,496

SOAP HAVING IMPROVED CARBONLESS IMAGING PROPERTIES

Willis J. Ludwig, St. Croix, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 17, 1982, Ser. No. 408,798

Int. Cl.³ B41M *5/16, 5/22*

U.S. Cl. 346—210 **18 Claims**

1. Imaging composition comprising the reaction product of

(1) at least one metal cation which can provide a visibly colored image when reacted with a dye precursor which is a derivative of dithiooxamide (2) at least one rosin salt, and (3) at least one water-insoluble compound containing lithium combined with a monocarboxylic acid of 7 to 22 carbon atoms.

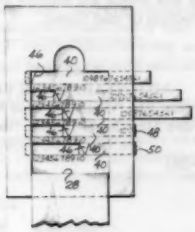
4. A multisheet form comprising a first sheet having on the reverse surface a color forming component, and underlying said first sheet, a second sheet having at least a portion of the obverse surface coated with the imaging composition of claims 1, 2, or 3.

4,461,497

INFORMATION STORAGE DEVICE AND METHOD

Charles R. Downey, 429 Cougar, Olympia, Wash. 98503

Filed Sep. 20, 1982, Ser. No. 420,132
Int. Cl.³ B42D *15/02*; B65D *27/04*
U.S. Cl. 283—65 **6 Claims**



1. An information storage device comprising a card-like body having a front panel, a rear panel, and means defining a space between said panels and a plurality of parallel slideways in said space, each slideway having an end opening at an edge of the body;

a plurality of slide members, one positioned in each slideway and each slide member having an end portion projecting outwardly of the edge of the body and from the end of the slideway to provide a pull tab positioned endwise outwardly of the slideway;

a strip of indicia on each slide member and a related strip of indicia recorded inside of the body adjacent the slideway, and indicator means on each slide member positioned so that when a given slide member is moved to expose a particular element of indicia, immediately outwardly of the edge of the body, adjacent the entrance to the slideway, said indicator is identifying a related element of indicia on the strip of corresponding indicia inside the device identical to said exposed particular element of indicia on said slide member;

means defining a window opening in the front panel through which the corresponding indicia and the indicator can be viewed; and

closure means initially closing said window opening.

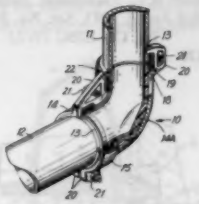
4,461,498

COUPLING MEMBERS FOR PIPELINE ASSEMBLIES

Donald R. Kunsman, Easton, Pa., assignor to Victaulic Company of America, South Plainfield, N.J.

Filed Dec. 2, 1981, Ser. No. 326,499
Int. Cl.³ F16L *55/00, 9/14, 43/00*
U.S. Cl. 285—16 **10 Claims**

1. A support for a conduit member formed from a mechanically weak, relatively inexpensive material having a high resistance to abrasion or attrition by particulate abrasive material, said support comprising plural coupling member sections formed from a material of high mechanical strength, said coupling member sections having complementary longitudinally extending faces permitting assembly of said coupling member sections into a unitary coupling member having a central passage for containing said conduit member, first extensions of said coupling member sections at each of the ends of said central passage, said first extensions each defining a gasket



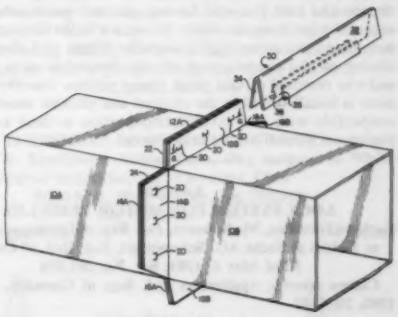
housing portion, and second extensions of said coupling member sections contiguous with said first extensions, said second extensions each defining a pipe clamp element.

4,461,499

TRANSVERSE JOINT SYSTEM FOR SHEET METAL DUCTS

A. Reese Hunter, and Robert H. Hudson, both of Greensboro, N.C., assignors to Industrial Air, Inc., Greensboro, N.C.

Filed Mar. 23, 1983, Ser. No. 477,923
Int. Cl.³ F16L *23/00*
U.S. Cl. 285—364 **4 Claims**



1. A transverse joint system for connecting adjacent sections of sheet metal ducts having a polygonal cross-sectional shape, said joint system comprising:

(a) each side wall of each of said duct sections terminating in an integrally formed, outwardly extending flange adjacent the interface between the two duct sections;

(b) each of said flanges including a plurality of laterally aligned, spaced tabs formed in the face thereof protruding outwardly from the surface of said flange opposite said interface;

(c) a coupling means for joining each pair of opposed flanges comprising a V- or U-shaped member having two opposed walls joined along one edge and having at least a strip portion of the free edges thereof folded back under the corresponding one of said walls to form retaining edges therebeneath;

(d) the distance between the spaced tabs and the adjacent wall of said duct is substantially equal to the corresponding width dimension of the folded strip portion of said coupling member; such that when said coupling member is assembled on a pair of adjacent flanges, said folded strip portions lock behind said tabs to effect said transverse joint.

4,461,500

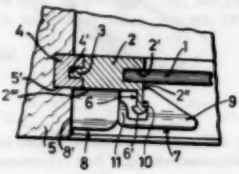
SWINGING LATCH BOLT FOR SLIDING WINDOWS

Jasper van der Horst, Veenendaal, Netherlands, assignor to Stenman Holland B.V., Veenendaal, Netherlands

Filed Jun. 3, 1981, Ser. No. 269,766

Int. Cl.³ E05C *19/12*

U.S. Cl. 292—128 **10 Claims**



1. A latch bolt assembly for accommodating latch means and comprising a housing capable of being surface to surface secured against a frame post and a handle pivotably seated in the housing, means interior of said housing for resiliently biasing said handle for movement between a normal latched condition and an unlatched condition, said handle having a neck portion, a free end portion and a pivot stump portion, said free end portion having an elongate recess defined therebetween, said housing having a base securable to the frame post and a pair of generally parallel flanges defining an elongate longitudinal channel capable of receiving said pivot stump portion for pivotal movement, said recess capable of receiving latch means therein and said free end having retainer means adapted to secure the latch means within the recess in the latched condition, insert cap means tightly seatable within said channel for closing off the opposite ends of said channel so as to prevent endwise removal of said pivot stump portion therefrom once same is installed within the channel and slidable insert means cooperable with said pivot stump portion to limit axial displacement thereof within said channel.

4,461,501

LOCK SYSTEM FOR MOTOR VEHICLES

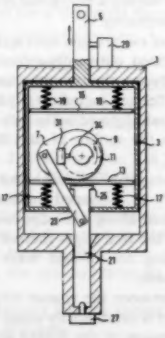
Gerhard Dumbser, Niederwerrn, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed May 6, 1981, Ser. No. 261,016

Claims priority, application Fed. Rep. of Germany, May 7, 1980, 3017402

Int. Cl.³ E05B *47/00*

U.S. Cl. 292—201 **12 Claims**



1. A locking system particularly suitable for motor vehicles for use with unidirectional electrical motor means comprising: lock means movable between a locking position and an unlocking position; a driven member coupled with said lock means; eccentric drive means for engaging said driven member to move said lock means between said locking position and said unlocking position; motor means for rotatively driving said eccentric drive means; control circuit means including switch means responsive to the position of said lock means for controlling operation of said motor means; and elastic means interposed between said driven member and said eccentric drive means to permit said motor means to continue to rotatively drive said eccentric drive means when movement of said lock means is obstructed; wherein said driven member is formed as a frame member and wherein said elastic means comprise a pair of elastic compensating elements arranged spaced apart opposite each other in the direction of movement of said driven member, said eccentric drive means being arranged to engage between said two compensating elements; said compensating elements including sliding parts for said eccentric drive means which are supported by means of compression springs at said frame member and which are slidably guided at said frame in the sliding direction of said frame.

4,461,502

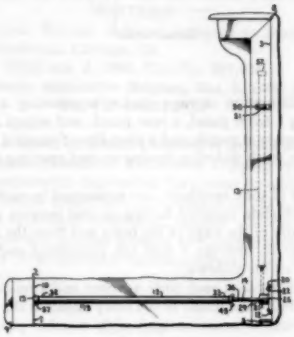
ADJUSTABLE BAR LOCK

Rollie M. Burgess, 716 N. 6th St., Blue Springs, Mo. 64015

Filed May 20, 1982, Ser. No. 380,418

Int. Cl.³ E05C *17/30*

U.S. Cl. 292—262 **3 Claims**



1. A bar lock for use between an abutment member and a slidable member, said slidable member being movable between a closed location and an open location and defining a vertical plane, which comprises:

(a) a base including:

(1) a flange portion adapted for attachment to one of said slidable and abutment members;

(2) a clevis portion extending from said flange portion and having a pair of clevises extending in the direction of travel of said slidable member, each said clevis having an aperture therethrough and said apertures being aligned along a pivotal axis;

(3) a pivot pin positioned in said clevis portion apertures;

(b) attachment means for attaching said base flange portion to said one member;

(c) an adjustable bar comprising:

(1) a first rigid link having a pivotal end with an aperture therethrough receiving said pivot pin, a telescopic end and external threads;

(2) a tubular second rigid link having a free end, a telescopic end and a bore extending longitudinally therethrough;

(3) said second link having a plug fixedly positioned in said bore and terminating at an end flush with said second link telescopic end;

(4) said plug having a plug bore extending therethrough with internal threads thereon;

(5) said first link telescopic end being threadably received in said plug bore whereby the length of said adjustable bar may be infinitely adjusted by rotating said links relative to each other;

(6) lock means comprising a nut threadably receiving said first link and adapted for being tightened against said second link telescopic end and said plug whereby relative rotation between said links is prevented; and

(7) said adjustable bar being adapted for movement about said pivotal axis extending through said pivot pin in a direction substantially normal to said plane defined by said slidable member between a locked position whereby said slidable member is locked in its closed location and a substantially upright pass position whereby said slidable member may be moved from its closed location to its open location;

(d) said movement of said bar being substantially limited to movement within said plane;

(e) a retainer clip adapted for attachment to said one of said members above said base, said clip comprising a pair of spaced arms extending from said one of said members and forming an interior cavity therebetween adapted to receive and retain said bar therein with said arms resiliently gripping said bar; and

(f) a resilient cap with a cylindrical bore terminating at a blind end therein and receiving said second link free end, said cap being adapted to abut the other of said members with said bar in its locked position whereby said slidable member is tightly held in its closed location.

4,461,503

ELECTRIC BODY TRIM GUARD FOR AUTOMOBILES

Phillip J. Melby, 211 N. Delaware, Mason City, Iowa 50401

Filed Sep. 15, 1982, Ser. No. 418,249
Int. Cl.³ B60R *27/00*
U.S. Cl. 293—118 **3 Claims**

1. An electric body trim guard for automobiles comprising a body trim channel containing solenoids and compression springs, said solenoids working against said compression springs, and means to electrically activate said solenoids to overcome the compression springs.

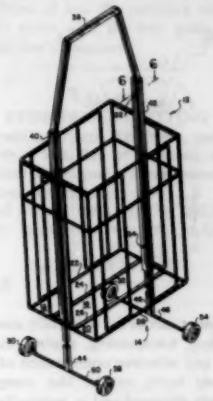
4,461,504

TENNIS BALL RETRIEVER AND CARRIER

Pedro Perez, and Pedro Perez, Jr., both of 31 Nelson Ave., Harrison, N.Y. 10528

Filed Sep. 15, 1982, Ser. No. 418,223
Int. Cl.³ A47F *13/06*
U.S. Cl. 294—19 A **6 Claims**

1. A tennis ball retriever and carrier comprising a container having a bottom wall, said bottom wall including at least one slotted aperture having thin parallel side edge members spaced apart by a dimension which is just a little less than the diameter of a standard tennis ball so as to permit entry of a tennis ball into said container through said aperture by squeezing the ball through said aperture, at least one of said edge members of said aperture including at least one roller to reduce the frictional resistance to the entry of the ball through said aperture, support means for supporting said container with said bottom wall spaced substantially above a supporting surface to prevent wear on said bottom wall, said supporting means being dimensioned to space said edge members of said aperture at a level substantially less than the radius of a standard tennis ball above the supporting surface to provide for admission of a tennis ball



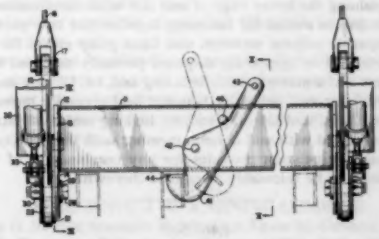
through said aperture when said container is lowered over the tennis ball with the aperture in registration with the tennis ball, said container being substantially rectangular, and said support means comprising four support wheels positioned adjacent to the corners of said bottom of said container, said support means including slidably lowerable legs to raise the height of said container after a group of balls have been retrieved.

4,461,505

SUSPENDED LOAD ROTATING LIFTER

George G. Lindbloom, Allison Park, Pa., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Mar. 30, 1982, Ser. No. 363,410
Int. Cl.³ B66C *1/04*
U.S. Cl. 294—88 **4 Claims**



1. Cable supported apparatus for lifting elongated loads and rotating them about a longitudinal axis comprising a beam, a latching mechanism carried by the beam for attaching an elongated load thereto, a pendant suspended by a cable positioned adjacent each end of said beam, a member rotatable within each pendant, means attaching each rotatable member to its adjoining beam end so as to permit vertical adjustment therebetween, and means connected between each said rotatable member and its pendant for rotating that member therein whereby by adjusting the vertical adjustment means the center of gravity axis of the rotating assembly of load and beam coincides with its axis of rotation so that said rotating assembly is balanced.

4,461,506

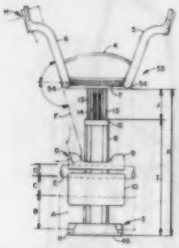
EQUIPMENT ASSEMBLING, CARRYING AND, OR, SECURING DEVICE

John M. Crump, 1018 Parkridge Cir., Jacksonville, Fla. 32211

Filed Jun. 14, 1982, Ser. No. 387,962

Int. Cl.³ A63C *11/02*

U.S. Cl. 294—147 **14 Claims**



2. A ski equipment carrier for optionally assembling, displaying, merchandizing, transporting, storing, carrying, securing and, or, locking any selective combination of equipment such as skis, poles and boots, or the like, comprising mutually aligned, oppositely disposed and symetrically related cooperable equipment retaining means each independently movable relative to a centrally located bipartite column member, first of said retaining means having a longitudinal axis extending between a hand grasp means and means telescopically engaged with guiding means disposed interiorly along the longitudinal axis of said column member, the improvement comprising a second of said retaining means telescopically engaged with the exterior longitudinal surface of said column member and further characterized by ski retainer means along the lower portion generally beneath and spacedly away from pole support means along the upper portion, third of said retaining means telescopically engaged with the exterior longitudinal surface of said column member and further characterized by pole retainer means generally beneath and spacedly away from oppositely disposed boot retainer means located congruous therewith, fourth of said retaining means disposed at the lower extremity of said column member and comprising means for supporting and retaining the lower edge of said skis while simultaneously functioning as means for fastening together the two parts of said bipartite column member, said hand grasp means further characterized by oppositely disposed pivotally mounted boot retainers and a manipulatable securing and, or, locking means rotatably disposed generally between said pivotally mounted boot retainers, said securing and, or, locking means adjustably communicated with said column member such that the consequential manipulation provides for any combination of said equipment to be releasably assembled therewith.

4,461,507

EDGE GARNISH MOLDING ASSEMBLY

Chojiro Minami, Yokohama, and Yukiharu Masui, Zama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 26, 1982, Ser. No. 401,909

Claims priority, application Japan, Aug. 5, 1981, 56-123381

Int. Cl.³ B62D *25/00*

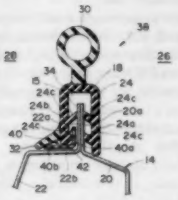
U.S. Cl. 296—76 **12 Claims**

1. An edge garnish molding assembly comprising:

a vehicle body structure having an upwardly flanged edge defining an opening receiving a movable closure;

an edge garnish molding mounted on said flanged edge and having a chamber extending along the top of said flanged edge; and

at least one drain insert member interposed between said edge garnish molding and said flange edge at the lowest part thereof to define a drain opening establishing communication between said chamber and the outside of the vehicle body.



4,461,508

FAIRING ASSEMBLY FOR MOTORCYCLES

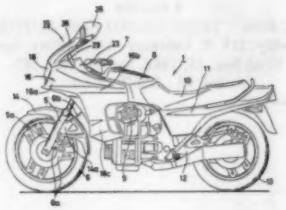
Tetsuo Ogishima, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1982, Ser. No. 378,357

Claims priority, application Japan, May 18, 1981, 56-71712[U]; May 19, 1981, 56-75505

Int. Cl.³ B62J *17/00*

U.S. Cl. 296—78.1 **4 Claims**



1. In a motorcycle having a fairing assembly (**15**) at a front upper portion of a body thereof, an improvement comprising a head light (**18**) disposed at a front end of said fairing assembly (**15**), a meter unit (**19**) indicative of running conditions of said motorcycle, said meter unit (**19**) being disposed in front of a steering handle (**7**) of said motorcycle, and turn signal units (**29**) disposed on both sides of said fairing assembly (**15**), in which said fairing assembly (**15**) is separated into upper and lower portions (**26**, **16**) by a line connecting said head light (**18**) to each of said turn signal units (**29**), said turn signal units (**29**) being each integrally formed with one portion of said fairing assembly (**15**); said upper portion (**26**) being adapted to cover an upper portion of said head light (**18**) and a rearside of said meter unit (**19**), said upper portion (**26**) being hinged rotatably at a front end thereof.

4,461,509

ROOF STRUCTURE

Kouichi Yaotani, Akigawa, and Masao Tashoh, Kamakura, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 2, 1981, Ser. No. 317,328

Claims priority, application Japan, Nov. 4, 1980, 56-157768[U]

Int. Cl.³ B62D *25/06*

U.S. Cl. 296—214 **7 Claims**

1. A vehicle roof lining support structure comprising:

(a) at least one tubular support member adapted to be fixed at both ends thereof to roof rails extending along a longi-

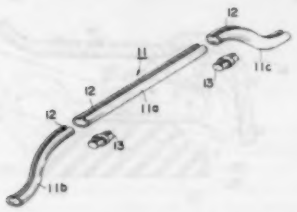
tudinal direction of said vehicle, said tubular support member comprising:

(i) a main tubular part,

(ii) two tubular side parts disposed at opposite ends of said main tubular part, at least one of said tubular side parts being separate from said main part,

(iii) each tubular side part having a curved section, one end of which is adapted to be fixed to said roof rails, and

(iv) said main tubular part and each of said tubular side parts having a slit provided therein and extending along the entire longitudinal direction thereof, said slit oriented along the longitudinal axis of said main and side parts and extending from the exterior to the interior of said main and side parts; and



(b) a joint member connected between said main tubular part and said at least one tubular side part, said joint member including:

(i) a first insertion portion insertable into said tubular main part, said first insertion portion having a rib insertable into said slit of said main tubular part and

(ii) a second insertion portion insertable into said at least one tubular side part, said second insertion portion having rib insertable into said slit of said at least one tubular side part,

whereby said main and side tubular parts and said joint member form a unitary construction for said roof lining support structure.

4,461,510

CHILDS SAFETY DEVICE FOR VEHICLES

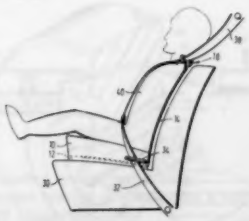
Douglas J. Cunningham, Lutterworth, and Harry W. Gilkes, Coventry, both of England, assignors to Britax-Excelsior Limited, England

Filed May 25, 1982, Ser. No. 381,839

Claims priority, application United Kingdom, May 29, 1981, 8116544

Int. Cl.³ B60N *1/12*; B60R *21/10*; A62B *35/00*

U.S. Cl. 297—250 **3 Claims**



1. A safety device for enabling a child to use an adult vehicle safety belt having a shoulder strap (**38**) and a lap strap (**32**), comprising a cushion (**10, 50**) having a respective belt retainer (**34, 54, 56**) on each side thereof to enable the lap strap (**32**) to inhibit forward movement of the cushion (**10, 50**), characterised by an auxiliary strap (**14**) attached to the cushion (**10, 50**) so as to extend from the back thereof and a belt guide connector (**18**) secured to the free end of the auxiliary strap (**14**), whereby when the cushion (**10, 50**) is disposed on a vehicle seat, each side of the lap strap (**32**) is engagable in a respective belt retainer (**34, 54, 56**) to retain the cushion against forward movement, and the shoulder strap (**38**) is slidably received in the belt guide connector (**18**) so that, in use, the shoulder strap (**38**) extends in front of and the auxiliary strap (**14**) extends behind the user's torso with the belt guide connector (**18**) located above the user's shoulder.

4,461,511

VEHICLE SEAT FITTING

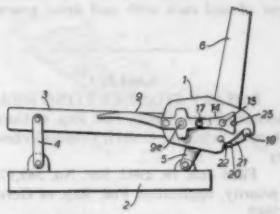
Hans-Jürgen Berneking, Porta Westfalica, and Wilhelm Rabe, Bad Eilsen, both of Fed. Rep. of Germany, assignors to P.A. Rentrop, Hubbert & Wagner Fahrzeugausstattungen, Stadthagen, Fed. Rep. of Germany

Filed May 6, 1981, Ser. No. 260,927

Claims priority, application Fed. Rep. of Germany, May 7, 1980, 3017433

Int. Cl.³ A47C *1/032*

U.S. Cl. 297—355 **14 Claims**



1. In a vehicle seat fitting, the seat incorporating means for height adjustment of the seat part, means for tilting adjustment motion of the backrest and means for foreward folding of the backrest,

a lever pivotal from a neutral position selectively into one or other of two end positions, one said end position enabling height adjustment of the seat part, by the height adjustment means, and the other said end position enabling adjustment of the inclination of the back rest by the tilting adjustment means,

a locking means for restraining foreward folding of the backrest, and

arrest means functionally connected with the locking means and operative to arrest motion of the pivotal lever whenever the locking means are in their release configuration so as to prevent movement of the lever into either of said end positions.

4,461,512

FEED SYSTEM OF A MINING COMBINE

Jury G. Sirotin; Stanislav V. Nikolaev; Lazar M. Gelfand; Pavel D. Romanov; Valentin D. Potapov; Mikhail S. Alexeev; Evgeny A. Volkov, all of Tulskaya; Vladlen D. Yalevsky, Kemerovskaya; Viktor G. Lukienko, Tula; Anatoly G. Popov, and Grigory A. Tupikov, both of Tulskaya, all of U.S.S.R., assignors to Podmoskovny Nauchno-Issledovatelsky I Proektnokonstruktorsky Ugolny Institut, U.S.S.R.

PCT No. PCT/SU82/00004, 371 Date Sep. 23, 1982, 102(e) Date Sep. 23, 1982, PCT Pub. No. WO82/02737, PCT Pub. Date Aug. 19, 1982

PCT Filed Feb. 3, 1982, Ser. No. 432,910

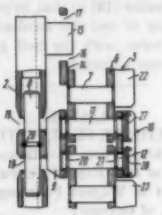
Claims priority, application U.S.S.R., Feb. 2, 1982, 3244663

Int. Cl.³ 421C *27/36*

U.S. Cl. 299—42 **3 Claims**

1. A feed system of a mining combine comprising: a drive gearwheel installed on said combine; a track consisting of

individual tubular segments connected to one another for limited relative rotation; a traction rack extending along said track and being engageable with said drive gearwheel, said traction rack consisting of individual pivotally interconnected segments including side members interconnected by equally



spaced pins, said pins meshing with said drive gearwheel; and pivotal joints connecting said traction rack to said track for rotation thereabout, said pivotal joints being located at points of joints between said segments of said track; wherein positive engagement of said rack with said drive gearwheel is maintained.

4,461,513

ROTARY STONE-CUTTING HEAD

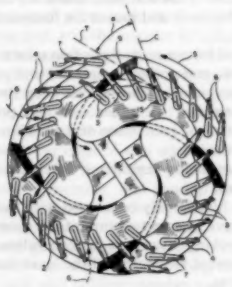
Rütger Berchem, Essen-Schuir, Fed. Rep. of Germany, assignor to Berchem & Schaberg GmbH, Gelsenkirchen, Fed. Rep. of Germany

Filed Jun. 18, 1982, Ser. No. 389,970

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3123963

Int. Cl.³ E21C *35/18*

U.S. Cl. 299—88 **8 Claims**



1. A rotary stone-cutting head comprising:

a body generally centered on and adapted to be rotated in a predetermined direction about an axis;

an array of cutter supports on said body directed at least partially in said direction;

respective cutter teeth carried on said supports and each having relative to said axis an outer cutting edge and relative to said direction a generally angularly forwardly directed and generally rectangular face adjacent said edge and formed with an array of cylindrical holding recesses, said teeth being at least at said edges of hardened metal, having respective centerlines, and forming respective circular orbits about said axis, said centerline forming acute angles with planes tangent to the respective orbit where crossed by the respective centerline;

means for removably securing said teeth to the respective supports; and

respective hardened-metal breaking pins having

cylindrical shanks fitted to said recesses and

conical or pyramidal points directed angularly forwardly in said direction and extending in said direction angularly forward beyond the face of the respective tooth, at least some of said points lying angularly ahead in said direction of the respective cutting edge.

4,461,514

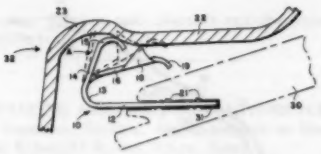
RETENTION CLIP FOR WHEEL COVERS

James Schwarz, P.O. Box 9310, Daytona Beach, Fla. 32020

Filed Sep. 19, 1983, Ser. No. 533,652

Int. Cl.³ B60B *7/06*

U.S. Cl. 301—37 CD **5 Claims**



1. A retaining clip for attaching automobile wheel covers and trim rings to a vehicle wheel having an annular safety hump and an interior annular axial flange comprising:

a J-shaped spring clip, said clip having an inner arm portion, a short outer arm portion, and a bight forming a transition from said inner arm portion to said outer arm portion;

a plurality of barbed tabs formed in said inner arm portion;

said outer arm portion having a first section at a first acute angle to said inner arm portion, said first section terminating in a pair of upward bent barbs;

said outer arm portion having a second section at a second acute angle greater than said first acute angle, said second section terminating in an inbent cam portion; and

said inner arm portion adapted to be inserted in a boss recess of a wheel cover or trim ring, said cam portion adapted to engage the interior of said annular safety hump and said barbs adapted to engage said interior annular axial flange.

4,461,515

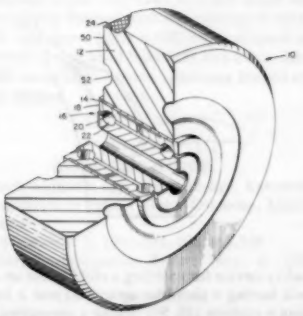
FIBER GLASS FILAMENT WOUND WHEEL

Greswold Gwynette, and Robert S. Cordaro, both of Shelby, N.C., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 28, 1981, Ser. No. 334,781

Int. Cl.³ B60B *3/00*

U.S. Cl. 301—63 PW **3 Claims**



1. A heat and moisture resistant solid wheel comprising a core adapted to receive a bearing, successive layers of fiber

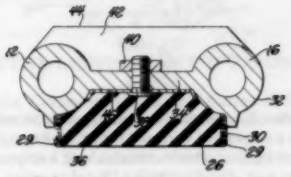
glass filaments wound around the core, said filaments being coated with a curable polyglycidyl ether of a bisphenol A to form a wheel around said core and the said polyglycidyl ether being cured to form the solid wheel, and wherein the fiber glass filaments in the solid wheel are present in an amount of 70 to 80 percent by weight, the balance being the cured polyglycidyl ether.

4,461,516

TRACK PAD REINFORCEMENT

Richard A. Lee, Warren, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 3, 1982, Ser. No. 414,992
Int. Cl.³ B62D *55/18*
U.S. Cl. 305—38 **4 Claims**



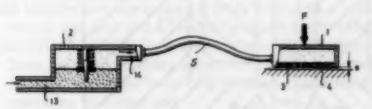
1. In a track shoe for an endless track adapted to move a vehicle over terrain, said shoe comprising a resilient elastomeric pad having a flat terrain-engagement surface and an endless annular edge surface extending generally normal to said terrain-engagement surface: the improvement comprising an endless pad-reinforcement band adhered to said edge surface for precluding significant outward bulge of said edge surface wher the terrain-engagement surface is subjected to high load forces; said band having a width dimension that corresponds to the width dimension of the annular edge surface whereby the band entirely confines and surrounds the edge surface; said band comprising reinforcement cords extending in a circumferential direction parallel to the flat surface of the pad, whereby the pad is substantially non-deformable in planes parallel to the terrain-engagement surface.

4,461,517

THROTTLE FOR GAS BEARINGS

Eckhard Enderle, Aalen-Wasseralfingen, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Nov. 2, 1982, Ser. No. 438,507
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1981, 3144788
Int. Cl.³ F16C *32/06*; F16K *31/126*
U.S. Cl. 308—5 R **8 Claims**



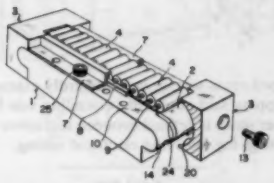
8. A gas bearing system comprising:
a gas operated bearing disposed over a bearing surface;
a source of pressurized gas;
a gas supply line connecting said source of pressurized gas to said gas bearing; and
throttle-valve means disposed in said supply line between said pressurized gas source and said bearing, said valve means having a valve body having inlet and outlet ports connected to said pressurized gas source and said gas operated bearing respectively and communicating with inlet and outlet chambers, a rim-mounted displaceable circular diaphragm separating said chambers, and auxiliary body centrally carried by said diaphragm and having a conically tapered throttle passage therethrough for gas flow from the inlet chamber to the outlet chamber, the taper of said passage being divergent in the gas flow direction, and a conical throttle pin positioned within and in clearance with said passage and divergent in the gas-flow direction the pressure differential between the inlet and outlet chambers displacing said diaphragm to regulate the size of the throttle passage to control gas flow through said outlet port to said bearing.

4,461,518

SLIDING ROLLER BEARING

Kazuhiko Tanaka, Mino, Japan, assignor to Nippon Thompson Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 258,478, Apr. 28, 1981, abandoned. This application May 27, 1983, Ser. No. 498,701
Claims priority, application Japan, May 7, 1980, 55-61971[U]
Int. Cl.³ F16C *31/06*
U.S. Cl. 308—6 C **18 Claims**



1. A sliding roller bearing comprising:
a base having an endless track surface from a load zone through a first transfer zone, a no-load zone and a second transfer zone back to said load zone,
said track surface being disposed in a groove in said base in said no-load zone, said track surface being elevated above said base in said load zone and in said transfer zones;
a plurality of stepped rollers each adapted to roll around said track surface; and
a pair of guides carried by said base one on each longitudinal side of said endless track surface in position to provide lateral guides for said rollers when on said track surface in said load zone and in said transfer zones.

4,461,519

CUPBOARD WITH METAL FRAMED SIDE WALLS

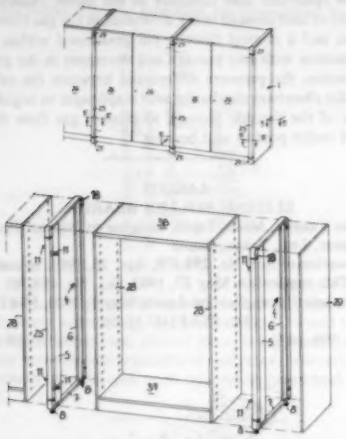
Norbert Hildebrandt, Grüner Winkel 32, D-4782 Erwitte 1, and Norbert Becker, Weringhauser Strasse 15, D-4782 Erwitte 2, both of Fed. Rep. of Germany

Filed Oct. 14, 1981, Ser. No. 311,120
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1980, 3039499
Int. Cl.³ E21B *47/00*
U.S. Cl. 312—257 A **10 Claims**

1. An improved article of furniture of the type having metal-framed side walls, wherein said side walls comprise:
a metal frame having spaced, vertically extending parts joined to spaced, horizontally extending parts;
inner and outer cover plates secured on respective sides to said metal frame by means of fasteners extending through said cover plates and engaging said metal frame, whereby said metal frame is sandwiched between said cover plate and a space is defined between said cover plates for receiving electrical wiring;
at least one metal strip secured to at least one vertical edge of said frame, said at least one edge facing outwardly from between said cover plates, said at least one metal strip

having an open U-shaped cross section with outwardly extending side legs; and

at least one resilient cover strip secured to said at least one metal strip, said at least one cover strip having an open,



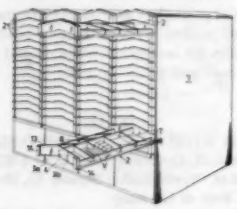
U-shaped cross section with inwardly extending side legs overlapping said outwardly extending side legs, whereby a further space is defined between said cover strip and said metal strip for receiving electrical wiring.

4,461,520

ELONGATE DRAWER WITH COMPARTMENTS FOR SLIDING MOUNTING IN CUPBOARDS, CHESTS OF DRAWERS, RACKS OR THE LIKE

Carl-Göran Alneng, Robertsviksvägen 16, S-182 35 Danderyd, Sweden

Filed Oct. 2, 1981, Ser. No. 307,788
Claims priority, application Sweden, Oct. 27, 1980, 8007541
Int. Cl.³ A47B *88/00, 95/02*
U.S. Cl. 312—330 R **3 Claims**



1. An elongated drawer adapted for slidably fitting in a chest of drawers and the like and having a plurality of compartments;

said drawer having a sloping bottom in its transverse direction between lateral vertical edges;

said bottom being formed from two longitudinal halves;

said halves being joined along the longitudinal central line of said bottom and sloping outwardly towards said lateral edges to form an obtuse angle with an upwardly directed apex;

a vertical spinal partition wall rigidly secured along said apex;

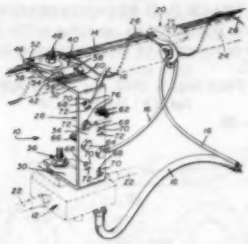
compartment walls extending from said partition wall to said lateral edges to form compartments in said drawer and, a vertical front wall with inwardly bent side edges forming handles.

4,461,521

STRAND HANGER BRACKET WITH COMMON GROUND CONNECTIONS

Isaac Sachs, 1240 Ridgewood Dr., Chomedey, Laval, Quebec, Canada H7W 1L3

Filed May 6, 1982, Ser. No. 375,391
Int. Cl.³ H01R *4/66*
U.S. Cl. 339—14 R **16 Claims**



5. A bracket for hanging a multi-tap directional coupling device from a suspended wire and for grounding a plurality of support wires each of which extends along a respective cable, connected to said coupling device, for supporting same, said support wires each having a terminal end and a connecting portion contiguous thereto, said bracket comprising:

an elongated member having a first end portion adapted to be detachably coupled to said coupling device, a second end portion provided with clamp means for releasable clamping engagement with said suspended wire, and a portion intermediate said first and second end portions defining a grounding plate; and

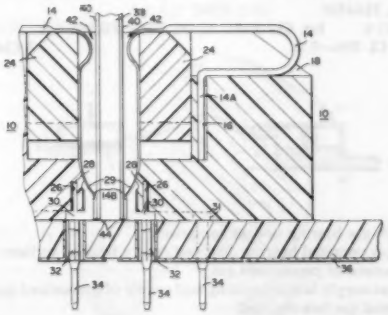
a separate fastener mans associated with each said support wire for releasably securing the connecting portion thereof against said grounding plate whereby to provide a common ground for all said support wires.

4,461,522

ZERO INSERTION FORCE CONNECTOR FOR A CIRCUIT BOARD

Johannes C. W. Bakermans, Harrisburg, Pa.; Dimitry G. Grabbe, Lisbon Falls, Me., and Iosif Korsunsky, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 23, 1982, Ser. No. 410,236
Int. Cl.³ H01R *9/09*
U.S. Cl. 339—17 M **8 Claims**



1. A miniature circuit board edge connector, comprising:

an insulative housing;

conductive posts projecting from said housing having conductive areas adjacent the interior of said housing;

circuit boards having conductive strips contained thereon said circuit board being receivable by said housing;

electrically conductive spring contact means disposed in said housing, and being characterized by a first inverted generally U-shaped portion and having at the other end a second portion forming an upright generally U-shape wherein the lower part of said second portion is in slidable electrical communication with said conductive areas further characterized is that the point wherein said U-shaped portions are joined is relatively deformable so as to come into contact with said conductive strips thereby establishing a circuit path along the upright U-shaped portion between the conductive strips and conductive posts; and

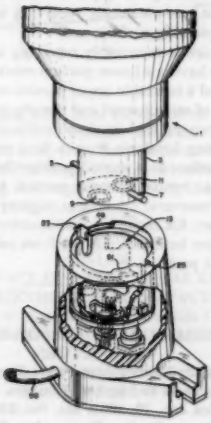
camming means disposed in said housing and engaging said first U-shaped portion wherein said camming means is utilized to urge said first portion downward thereby establishing said circuit path.

4,461,523

PROTECTIVE LAMPHOLDER FOR BAYONET BASE LAMP

George Ustin, Croton-on-Hudson, and Andrew P. Soltis, Yonkers, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Dec. 1, 1981, Ser. No. 326,242
Int. Cl.³ H01R *13/625*
U.S. Cl. 339—41 **4 Claims**



1. A lampholder for a bayonet base lamp having pins protruding from opposite sides of the base and having electrical contacts on the bottom of the base;

said lampholder comprising a body including a hollow portion at one end and a support portion at the other end;

said hollow portion including an opening for receiving the lamp base and securing means for engaging at least one of the pins when the lamp base is inserted and rotated to an operating position; and

said support portion including resiliently-loaded contacts for making electrical connection with the contacts on the lamp base when the lamp base is in the operating position;

wherein the improvement comprises:

(a) a rotatable insulating member mounted in the hollow portion of the body for interposition between an inserted lamp base and the resiliently-loaded contacts, said member including means for engaging at least one pin of the lamp base to effect rotation of the member with the lamp base and including apertures permitting the resiliently-loaded contacts to make connection with the electrical contacts of an inserted lamp base after rotation to the operating position, said member covering the resiliently-loaded contacts when the lamp base is removed from the lampholder;

(b) retaining means projecting inwardly from an inner surface of the hollow portion of the body for retaining the rotatable insulating member in the body; and

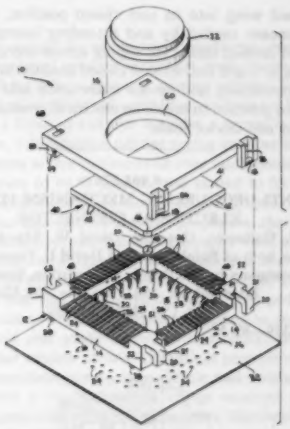
(c) a resiliently-loaded guide plate disposed between the rotatable insulating member and the support portion of the body for urging said member against the retaining means and for urging at least one of the pins of an inserted lamp base into engagement with the securing means, said guide plate including openings for enabling passage of the resiliently-loaded contacts.

4,461,524

FRAME TYPE ELECTRICAL CONNECTOR FOR LEADLESS INTEGRATED CIRCUIT PACKAGES

James B. McGhee, El Cajon, Calif., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Jun. 7, 1982, Ser. No. 385,536
Int. Cl.³ H01R *23/72*
U.S. Cl. 339—75 MP **6 Claims**



6. A connection for making electrical connections to leadless integrated circuit packages, comprising:

a generally rectangular frame formed of bar shaped sides; a plurality of resilient conductive elements, each having a flat central portion which is diagonally embedded into one side of the frame along a straight line, where the upper end of each element extends from a point adjacent the top outer corner of the side and is bent across the top surface in the direction of the inner corner of the side to form a cantilevered spring pressure contact, and where the lower end of each element extends from a point adjacent the bottom inner corner of the side and is bent to vertically depend from the bottom surface of the side to form a pin terminal; and

a cover which fits over the frame to retain the leadless package in contact with the pressure contacts.

4,461,525

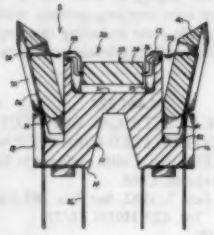
INTEGRATED CIRCUIT TEST SOCKET

Wendell L. Griffin, South Bend, Ind., assignor to Wells Electronics, Inc., South Bend, Ind.

Filed Aug. 17, 1982, Ser. No. 408,868
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—75 M **14 Claims**

1. A test socket for an integrated circuit device having a body with leads extending therefrom, said socket comprising a base having upper and lower faces and spaced side faces, said

base upper face adapted to accommodate said device body with said device leads overlying said upper face, a clamp wing pivotally mounted to said base adjacent a said side face thereof, said wing being shiftable between an open position wherein the wing extends outwardly of said base upper face and a closed position wherein the wing is located adjacent the base upper face, and biasing means contacting said wing and base for



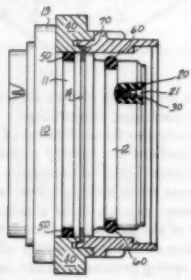
urging said wing into its said closed position, a conductive contact means carried by and extending laterally from said wing; said contact means for wiping across said device leads as said wing is urged into its said closed position and for overlying and contacting said device leads when said wing is in its said closed position to create an electrical connection between the socket and device leads.

4,461,526

ANTI-DECOUPLING MECHANISM FOR AN ELECTRICAL CONNECTOR

David O. Gallusser, Oneonta; David W. MacAvoy; Stephen Punako, both of Bainbridge, and David L. Frear, Afton, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jul. 28, 1982, Ser. No. 402,526
Int. Cl.³ H01R *13/629*
U.S. Cl. 339—89 M **3 Claims**



1. In combination with an electrical connector assembly of the type having a tubular housing; an insert of dielectric material having a plurality of axial passages therein, said insert mounted within said housing; an electrical contact mounted in each of said passages; a coupling nut, said coupling nut having a rear portion and a forward mating portion; means for rotatably mounting said coupling nut to the outside of said housing, said means for rotatably mounting said coupling nut operatively connected to the rear portion of said coupling nut, said coupling nut adapted to connect to a second housing so that said housing and said second housing may be connected together with their respecitve contacts held in a mated relationship; and means for retarding the rotational movement of the coupling nut, the improvement wherein the means for retarding rotational movement of the coupling nut comprises:

a radial groove in one of said coupling nut and housing located rearwardly of the means for rotatably mounting said coupling nut to said housing; and

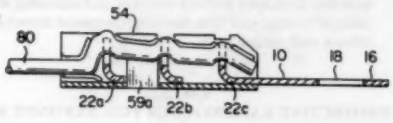
an annular ring **50**, comprised of a dielectric material, located in said annular groove in pressure tight relationship radially between said coupling nut and said housing.

4,461,527

INSULATION DISPLACING TERMINAL

Hyman Izraeli, West Caldwell, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Dec. 29, 1981, Ser. No. 335,378
Int. Cl.³ H01R *11/20*
U.S. Cl. 339—97 R **5 Claims**



1. An electrical terminal for connecting an insulated cable including at least one conductor therein comprising:

a body portion defining an elongate channel having an open upper end;

at least one member transversely spanning said channel, said member including an upper insulation piercing surface and at least one conductor receiving slot commensurate with said piercing surface; and

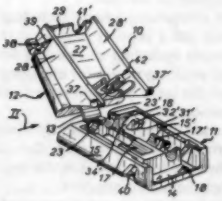
an elongate sleeve removably receiving said body portion, said sleeve having a lower portion receiving said elongate channel and a bendable upper portion covering said open upper end of said channel and thereby providing an opening for receiving said insulated cable therein, said upper portion being bendable from a first position above said piercing surface to a second position below said piercing surface, said bendable upper portion further includes at least one transverse opening in registry with said at least one member, for receiving said member upon movement of said upper bendable portion from said first position to said second position.

4,461,528

ELECTRICAL CONNECTOR FOR INSULATED CONDUCTORS

Guy Durand, Montville, and Jean-Pierre Barriuso, Buchy, both of France, assignors to Legrand, Limoges, France

Filed Jan. 19, 1982, Ser. No. 340,652
Claims priority, application France, Jan. 23, 1981, 81 01226
Int. Cl.³ H01R *13/38*
U.S. Cl. 339—98 **22 Claims**



1. An electrical connector for insulated conductors, said connector comprising a body and a cover both of insulating material and together forming a casing, said body and cover being integral and pivotally connected together by hinge means, wherein said body defines at least two elongate housings each of a cradle configuration disposed in line with engagement apertures provided in a transverse wall of said body,

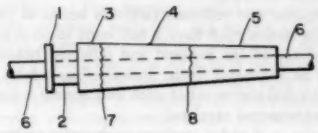
for setting conductors to be connected in position; a connecting blade member is carried by said cover, projects from the inside surface thereof and has at least two slots each disposed in line with a respective one of said cradle-like housings in said body for engaging the conductors to be connected and for making contact with conducting cores of the conductors when said cover is moved to a closed position on said body, and wherein engagement means are provided between said body and said cover, said engagement means comprising at least one guide ramp means formed on one of said body and said cover and at least one lug carried by the other of said body, said cover for co-operating with said guide ramp means during closure movement together of said body and said cover, and said ramp means is of a curved profile and its convexity is directed away from said hinge means.

4,461,529

STRAIN RELIEF BOOT

James D. Fariss, Wilmington, Del., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Filed Jun. 16, 1982, Ser. No. 388,957
Int. Cl.³ H01R *13/56*
U.S. Cl. 339—102 R **6 Claims**



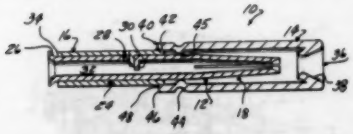
1. A plastic strain relief boot affixed to an electrical cable and connector in order to transmit transverse and axial forces acting on the cable away from the conductor-connector junction and to limit cable flexing, wherein the hardness of the boot is graduated along the length of the boot, the hardness being greatest adjacent to the connector.

4,461,530

SOCKET CONTACT FOR ELECTRICAL CONNECTORS AND METHOD OF MANUFACTURE

Robert W. Brush, Sr., Unadilla, and R. Amelia Piscitelli, Sidney, both of N.Y., assignors to Bendix Corporation, Southfield, Mich.

Filed Sep. 20, 1982, Ser. No. 419,669
Int. Cl.³ H01R *13/12*
U.S. Cl. 339—258 R **1 Claim**



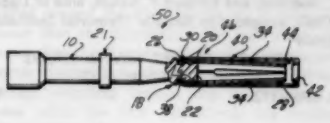
1. A socket contact for an electrical connector comprising a tubular contact liner having a plurality of spring fingers at one end integral with and extending from a rear section thereof, a rear sleeve of a length to be coextensive with said rear section and of a diameter to be slidably received over said rear section, and a generally cylindrical front guide sleeve received over said spring fingers and having a rear end extending over a portion of said rear section, said rear end having an endface forming a shoulder with the periphery of said rear sleeve portion, said guide sleeve of a larger diameter than said contact liner, and said rear end formed with a circumferential crimp having an inside diameter substantially equal to the outside diameter of said sleeve section of said contact liner, said socket contact characterized by a fillet weld at the shoulder formed by the end face of said front guide sleeve and the periphery of said portion of said rear sleeve and also characterized in that said rear sleeve is staked to said sleeve section of said contact liner.

4,461,531

SOCKET CONTACT FOR ELECTRICAL CONNECTOR AND METHOD OF MANUFACTURE

Alan L. Davis, Unadilla, and Stephen Punako, Bainbridge, both of N.Y., assignors to Bendix/Allied Corporation, Southfield, Mich.

Filed Sep. 22, 1982, Ser. No. 421,605
Int. Cl.³ H01R *13/12*
U.S. Cl. 339—258 R **4 Claims**



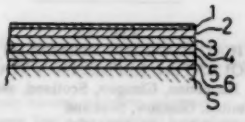
1. A socket contact for an electrical connector comprising a generally cylindrical conductive socket body formed with a rear end, that includes a terminal portion adapted to receive the bared end of an electrical conductor, said socket body also formed with a forward end that includes a generally cylindrical projection; a conductive tubular spring member having an internal diameter at one end received over said generally cylindrical projection to be fit thereto, and slotted to form spring fingers; and a tubular guide sleeve received over both said spring member and said cylindrical projection characterized by said cylindrical projection being formed with a reduced diameter section and a larger diameter section adjacent thereto at the outer end thereof, with both said one end of said spring member and one end of said guide sleeve crimped radially inward towards said reduced diameter section to secure said spring member and guide sleeve to said socket body, said larger diameter section of said cylindrical projection formed with an intermediate groove and wherein said spring member is formed with a circumferential crimp received into said groove to improve the electrical connection therebetween and provide a locating feature at assembly.

4,461,532

HEAT RAYS REFLECTING FILM

Susumu Sato; Tadashi Hattori; Yoshiki Ueno, and Takashi Taguchi, all of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 28, 1982, Ser. No. 372,827
Claims priority, application Japan, Apr. 30, 1981, 56-66708
Int. Cl.³ G02B *5/22, 5/28*
U.S. Cl. 350—1.6 **9 Claims**



1. A heat reflecting film, for reflecting near infrared rays in sunlight, which is formed on the surface of a base plate, said film comprising:

first dielectric thin layers having a low refractive index; and

second dielectric thin layers having a refractive index higher than that of said first dielectric thin layers;

said first dielectric thin layers and said second dielectric thin layers being alternately piled up so that one of said first

dielectric thin layers contacts with the air and one of said second dielectric thin layers contacts with said base plate;

said one first dielectric thin layer contacting with the air and having an optical thickness of $\lambda/8$, wherein λ is wavelength of the near infrared rays to be reflected;

the other first dielectric thin layers and all of said second dielectric thin layers having optical thickness of $\lambda/4$;

provided that each of said layers has thickness expressed by the formula:

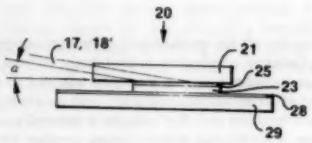
thickness = optical thickness/n_r, wherein n_r is the refractive index at each said layer for a visible wavelength of interest.

4,461,533

FORMING AND READING HOLOGRAMS

Rand C. Sherman, and Richard P. Kenan, both of Upper Arlington, Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

Filed Sep. 16, 1982, Ser. No. 418,892
Int. Cl.³ G03H *1/02*
U.S. Cl. 350—372 **17 Claims**



1. A method of forming and reading a hologram comprising:

directing recording beams of coherent electromagnetic radiation at a recording first frequency (and corresponding first wavelength in free space) into a first medium, having a first index of refraction, and therethrough at a recording second wavelength, and onto a surface of said first medium positioned contiguous to a surface of a recording second medium, having a second index of refraction, to form an interference pattern in both of said media, the pattern being continuous across the boundary between the two media;

developing the recording second medium to produce a hologram therein; and

directing a reconstructing beam of coherent electromagnetic radiation at a reconstruction second frequency that is lower than the recording first frequency (and corresponding third wavelength in free space that is longer than the said first wavelength) into a third medium having a third index of refraction, that is higher than said first index of refraction, and therethrough onto a surface of said third medium positioned contiguous to a surface of the second medium at or parallel to the said boundary, and into said second medium to read the hologram at the said recording second wavelength.

4,461,534

OPTICAL SCANNING SYSTEM WITH TWO SEQUENTIAL REFLECTION STATIONS

Herbert M. Runciman, Glasgow, Scotland, assignor to Barr & Stroud Limited, Glasgow, Scotland

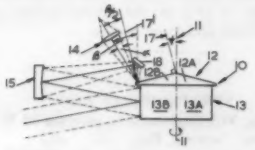
Filed Nov. 10, 1982, Ser. No. 440,701
Claims priority, application United Kingdom, Nov. 25, 1981, 8135500
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—6.8 **4 Claims**

1. An optical scanning system comprising a rotor assembly having first and second reflective zones each composed of a plurality (N) of circumferentially-contiguous facets, respective facets of the first zone being angularly coextensive with respective facets of the second zone and sequentially passing through respective first and second reflection stations upon rotation of the rotor assembly about its axis of rotation,

static focussing means arranged to direct radiation in a beam between an array of radiation detectors or emitters and the first-reflection station with the array and the first reflection station located at conjugate foci of the focussing means, and

static optical means arranged to direct radiation in a beam between the first and second reflection stations,

wherein



(a) the facets of the first reflective zone are each planar having a normal disposed at an angle ψ to the rotation axis of the rotor assembly,

(b) the incident and reflected radiation beams at the first reflection station each have a half cone angle α and the principal ray of the incident and reflected beams each subtend an angle $\beta/2$ to the normal of each facet in the first reflection station when each said normal is coplanar with said principal rays, and

(c) the angles α, β and ψ conform to the relationship:

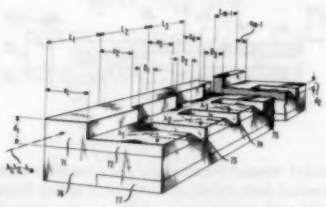
$$\sin \psi \cdot \cos \beta/2 = \frac{\alpha \cdot N}{360} \ (\alpha \text{ in degrees}).$$

4,461,535

WAVELENGTH FILTERS

Enrique A. J. Marcatili, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 21, 1981, Ser. No. 313,603
Int. Cl.³ G02B *5/174*
U.S. Cl. 350—96.14 **18 Claims**



1. A wavelength filter comprising:

a wavepath whose effective refractive index profile is a maximum along its longitudinal axis and decreases asymmetrically along a direction perpendicular to said axis said index profile defining a critical wavelength λ_c;

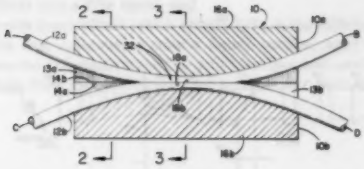
and means for collecting signal wave energy radiated away from said longitudinal axis of said wavepath having a wavelength longer then λ_c.

4,461,536

FIBER COUPLER DISPLACEMENT TRANSDUCER

Herbert J. Shaw, Stanford, and Michel J. F. Digonnet, Menlo Park, both of Calif., assignors to Board of Trustees of Leland Stanford Jr. University, Stanford, Calif.

Filed Sep. 10, 1981, Ser. No. 300,956
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.15 **21 Claims**



20. An optical coupler apparatus for measuring a displacement within a predetermined range, said apparatus comprising:

first and second blocks having first and second grooves therein, respectively;

first and second optical fibers mounted in said grooves of said first and second blocks, respectively, said first and second fibers having a portion of the cladding removed therefrom to form first and second oval surfaces, respectively, coplanar with first and second surfaces on said blocks, respectively, said first and second surfaces juxtaposed to place said oval surfaces in facing relationship to form an interaction region in which light is coupled between said fibers, the coupling efficiency of said apparatus varying with displacement of said oval surfaces over said predetermined range;

means, between said surfaces of said blocks, for lubricating said blocks to prevent said blocks from binding;

means for sliding the surfaces of said first and second blocks relative to one another in accordance with the displacement to be measured to displace said oval surfaces;

means for measuring said coupling efficiency of said coupler apparatus; and

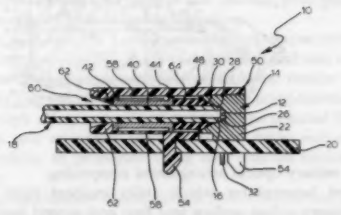
means, responsive to said measuring means, for indicating said displacement.

4,461,537

FIBER OPTIC CONNECTOR ASSEMBLY

Jack D. Raymer, II, St. Charles; Stephen A. Sampson, Wheaton, and Burke J. Crane, Lombard, all of Ill., assignors to Molex Incorporated, Isle, Ill.

Filed Dec. 24, 1981, Ser. No. 334,136
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.20 **10 Claims**



1. A connector assembly for mating the end of an optic fiber with a second optic element, said assembly including

a cylindrical ferrule adapted to be secured around the fiber, said ferrule having a flange located a predetermined distance from the end of the fiber,

a housing for receiving and maintaining the fiber end and second optic element in mating relation, said housing having a first housing portion for receiving the second optic element, a second housing portion defining an elongated passageway for receiving the fiber and ferrule, said passageway including an open end through which the fiber and ferrule are received, and locking means at the open end of the passageway cooperating with the ferrule to maintain the fiber within the passageway, and

port means located generally between the fiber end and the second optic element allowing optical communication therebetween to define an optical interface region, said port means including inverted funnel means facing the fiber end for guiding the fiber end into alignment with the second optic element,

the improvement comprising:

a surface extending radially outwardly from the ferrule facing the port means; and

an open ended cylindrically shaped elastomeric member secured around the fiber having an outside diameter greater than the diameter of the port means and not greater than the diameter of the passageway, said elastomeric member being held in compression between the radially extending surface and the inverted funnel means when the fiber and ferrule are inserted and locked into the first housing portion;

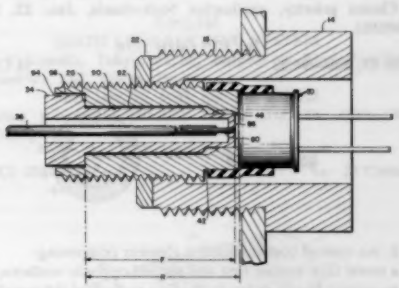
whereby the pressure of the elastomeric member against the inverted funnel means serves to maintain the integrity of the optical interface by simultaneously maintaining the proper distance of the fiber end from the port means and sealing the optical interface at the port means from the outside environment.

4,461,538

ACTIVE RECEPTACLE HAVING RESILIENT SLEEVE-LIKE BUSHING

Richard A. Breed, III, South Attleboro; Henry W. Doyle, Ocean Bluff, and Harold A. Roberts, North Attleboro, all of Mass., assignors to Augat Inc., Mansfield, Mass.

Filed Oct. 20, 1981, Ser. No. 312,999
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.20 **7 Claims**



1. Apparatus for providing efficient optical coupling between an optical fiber contained in a ferrule and an active device comprising:

a connector body having a hollow interior;

a separate adapter having a central channel adapted to receive said ferrule, said adapter mounted to said connector body and having a distal end of a predetermined outside dimension;

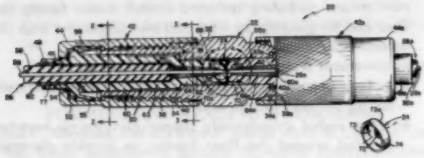
an active device which has an outside dimension substantially matching that of said distal end; and,

means for mounting said active device in butting relationship to said distal end including a resilient sleeve-like bushing overlying a portion of said distal end and a portion of said active device.

4,461,539
FIBER OPTIC CONNECTOR ASSEMBLY WITH SLIDABLE SPACER

James R. Bailey, Chicago, and Eric L. Long, Northbrook, both of Ill., assignors to Switchcraft, Inc., Chicago, Ill.

Filed Jun. 1, 1981, Ser. No. 268,928
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.21 11 Claims



1. A fiber optic coupling device comprising:
a body having a bore therein with opposite ends of said bore adapted to receive opposing ends of respective fiber optic cables; and
a spacer slidably disposed within said bore and self-supported therein by having a side wall portion of the spacer engaged with wall portions of said bore, said spacer having a predetermined thickness wall portion disposable between said opposing ends of the fiber optic cables within the body and being slidable along said bore upon engagement of said predetermined thickness wall portion with either one of said opposing ends of the respective fiber optic cables.

4,461,540
OPTICAL COMMUNICATION ELEMENT AND OPTICAL COMMUNICATION CABLE COMPRISING SUCH AN ELEMENT

Adrianus J. J. Franken, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 223,462, Jan. 8, 1981, Pat. No. 4,396,446.
This application Dec. 21, 1982, Ser. No. 451,916
Claims priority, application Netherlands, Jan. 22, 1980, 8000382
Int. Cl.³ G02B 5/16
U.S. Cl. 350—96.23 18 Claims

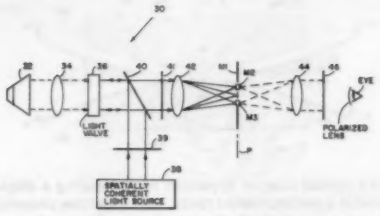
1. An optical communication element comprising:
a metal tape having first and second opposite surfaces; and
an optical fiber bonded to the first surface of the metal tape by an adhesive, said optical fiber having an axis;
characterized in that the optical fiber, which is bound to the metal tape, is held under axial compression by the metal tape.

4,461,541
STEREOSCOPIC VIDEO IMAGE DISPLAY

Joseph G. M. Duthie, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 25, 1982, Ser. No. 362,015
Int. Cl.³ G02B 7/26; H04N 9/54
U.S. Cl. 350—132 6 Claims

1. A method of displaying encoded stereoscopic video images comprising the steps of:
displaying encoded film containing video images on a television monitor;
imaging the video images as an incoherent input onto a light valve;
addressing the light valve output to provide coherent output images;
polarizing the addressed light valve output;
transforming the polarized output by Fourier transformation

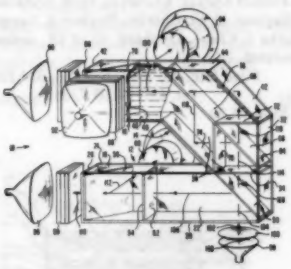


to create in a plane, a pattern having different orders of diffraction light containing said images;
masking the plane with first and second masks disposed in a common plane to pass only selected of said diffraction light for sequentially passing alternate orthogonally polarized video images therethrough;
reimaging the images onto a screen for viewing; and viewing of said reimaging image by an observer through polarized eyeglasses to produce a stereoscopic effect.

4,461,542
HIGH EFFICIENCY OPTICAL TANK FOR THREE COLOR LIQUID CRYSTAL LIGHT VALVE IMAGE PROJECTION WITH COLOR SELECTIVE PREPOLARIZATION

Ralph J. Gagnon, Chico, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Dec. 28, 1981, Ser. No. 334,680
Int. Cl.³ G02F 1/13, 1/00; G03B 21/00
U.S. Cl. 350—331 R 5 Claims



1. A unitary optical arrangement comprising:
a first beamsplitter which splits incident light passing through a first surface into first and second beams, said first beam having a first color component and said second beam having second and third color components, respectively;
a second beamsplitter mounted in optical alignment with said first beamsplitter which directs light of said first color to a second surface and modulated light from said second surface to a third surface;
a third beamsplitter in optical alignment with said first beamsplitter which splits said second beam into third and fourth

beams having first and second polarization states, respectively;

a first filter which transmits light of the second color in the third beam to provide an output beam having the second color and the first polarization state;

a second filter which transmits light of the third color in said fourth beam to provide an output beam having the second polarization state and the third color;

means for combining the outputs of said first and second filters into a fifth beam; and

a fourth beamsplitter which directs light in the fifth beam of the first polarization state a fourth surface, light of the second polarization state to a fifth surface and modulated light from said fourth and fifth surfaces to a sixth surface.

4,461,543

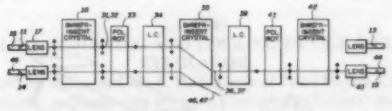
ELECTRO OPTIC SWITCH

Donald H. McMahon, Carlisle, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 26, 1982, Ser. No. 362,563

Int. Cl.³ G02F 1/29

U.S. Cl. 350—383 **6 Claims**



1. An apparatus for switching arbitrarily polarized optical signals comprising:

first birefringent means positioned to receive said arbitrary polarized optical signals for deflecting components thereof at a first polarization to a first optical path and components thereof at a second polarization to a second optical path, said first and second optical paths defining a first plane;

first polarization rotator means positioned to receive said components propagating along said second path for rotating said second polarization and emitting therefrom components propagating along said second path polarized substantially at said first polarization;

optical path selector means positioned to receive said components propagating along said first path and said components emitted from said first polarization rotator means along said second path for guiding said components therethrough along one pair of optical paths selected from at least two selectable pairs of optical paths and emerge therefrom to propagate along said selected optical path pair:

second polarization rotator means positioned in one path of said selected optical path pair for rotating said first polarization substantially to said second polarization as said components along said one path of said selected path pair propagates therethrough;

second birefringent means positioned to receive light propagating along said selected path pair for deflecting components incident thereto along said selected path pair to a common optical path and emerge thereon as an arbitrarily polarized optical signal.

4,461,544

AUTOFOCUSING LENS MOUNTING

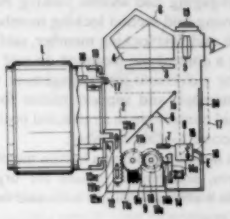
Takasi Isobe, Tokyo, and Shigeru Kamata, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1981, Ser. No. 326,289

Claims priority, application Japan, Dec. 4, 1980, 55-171205; Dec. 10, 1980, 55-174091

Int. Cl.³ G02B 7/10, 7/11, 7/04; G03B 7/08

U.S. Cl. 350—429 **11 Claims**



1. A mechanical mounting for an objective lens capable of automatic focusing control, comprising:

(a) holding means for holding optical elements for focusing;

(b) a rotary member rotating about an optical axis based on a signal from means for detecting the object distance, and being stopped from rotation based on a signal from said detecting means;

(c) a fixed barrel having said rotary member fitted in one of the inner diameter and the outer diameter thereof; and

(d) means for converting rotative movement of said rotary member to axial movement of said holding means, said converting means being comprised of one of a longitudinal and arcuate slot formed in said fixed barrel, one of an arcuate and longitudinal slot formed in said rotary member, and an engaging member fitted at a cross point of said slots and fixedly mounted on said holding means, thereby enabling focusing adjustment of said optical elements to be controlled by rotation of said rotary member.

4,461,545

ZOOM LENS LOCKING SYSTEM

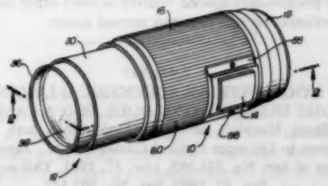
Akio Yokotsuka, Tokyo, Japan, assignor to Kino Precision Industries, Ltd., Tokyo, Japan

Filed Dec. 16, 1981, Ser. No. 331,121

Claims priority, application Japan, Jul. 28, 1981, 56-111131[U]

Int. Cl.³ G02B 7/04, 15/00

U.S. Cl. 350—429 **25 Claims**



1. A locking system for releasably locking relatively movable housing portions of a photographic lens in a selected position of adjustment with respect to each other, comprising:

a first locking member on one housing portion, said first locking member including a rack having a plurality of teeth formed thereon;

a second locking member mounted on another housing portion, said second locking member including a ratchet

having at least one tooth for locking engagement with said rack teeth and movable between a first position in positive locking engagement with said first locking member to lock the housing portions against movement relative to each other and a second position out of locking engagement with said first locking member to permit movement of the housing portions relative to each other;

spring means for urging said second locking member into locking engagement with said first locking member; and

means for engaging said second locking member for selectively moving said second locking member out of engagement with said first locking member, said engaging means including a control pin mounted on said another housing portion for movement into engagement with said second locking member, and support means for normally positioning said control pin in a retracted position with respect to said second locking member;

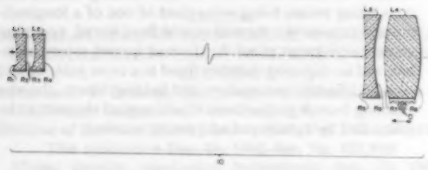
said support means including a button member carrying said control pin, and biasing means for urging said button member to a normal position with said control pin in said retracted position.

4,461,546

DIFFRACTION-LIMITED ACHROMATIC BEAM EXPANDING TELESCOPE

C. Verne Muffoletto, 9411 Flagstone Dr., Baltimore, Md. 21234, and John B. Goodell, 1201 Southview Rd., Baltimore, Md. 21218

Filed Jun. 24, 1982, Ser. No. 391,574
Int. Cl.³ G02B *11/22, 13/14, 23/00*
U.S. Cl. 350—453 **12 Claims**



1. In a system for laser beam expansion including Galilean telescope type optics having first, second, third and fourth lenses in serial relation in direction of beam passage therethrough, the improvement comprising: means for providing a range of operation from 2400 A to 11,000 A, free from need for focus adjustment throughout said range, including said first, second and third lenses having biconcave surfaces, said fourth lens having biconvex surfaces; said first and second lenses being of fused silica and proximately spaced; and said third and fourth lenses being respectively of fused silica and calcium fluoride proximately spaced relative to each other and distally spaced relative to said first and second lenses.

4,461,547

LENS HOOD WITH AN ECCENTRICALLY DISPOSED LIGHT INTERCEPTING BODY FOR A CAMERA

Kazuo Ikari, Hachioji, and Toru Fujii, Hino, both of Japan, assignors to Olympus Optical Company, Ltd., Japan

Division of Ser. No. 331,585, Dec. 17, 1981. This application Jun. 23, 1983, Ser. No. 507,141
Claims priority, application Japan, Mar. 13, 1981, 56-35110; Mar. 13, 1981, 56-35111
Int. Cl.³ G03B *11/04*
U.S. Cl. 350—580 **4 Claims**

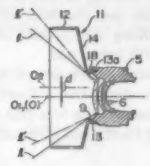
1. The combination, comprising:

(A) a camera having a picture taking lens, said lens having an optical axis, said lens being shiftable in a direction perpendicular to said optical axis; and

(B) a lens hood including:

(1) a mounting section adapted to be mounted on a lens barrel of said picture taking lens; and

(2) a light-intercepting body having a central axis and being coupled with said mounting section in an eccentric relationship therewith, said lens hood being coupled



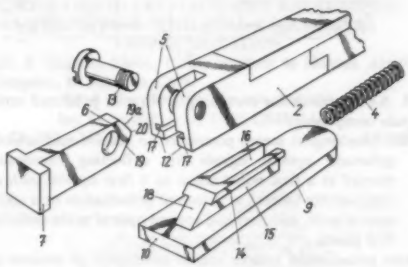
to said picture taking lens in such an orientation that said optical axis and said central axis are parallel to each other but spaced apart from each other by a distance less than the radius of said picture taking lens as measured along a direction to said optical axis.

4,461,548

SPECTACLE FRAME

Günther Drlik, Pforzheim, Fed. Rep. of Germany, assignor to OBE-Werk Ohnmacht & Baumgartner GmbH & Co. K.G., Ispringen, Fed. Rep. of Germany

Filed Apr. 14, 1981, Ser. No. 254,144
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1980, 3015548; Jun. 13, 1980, 3022231
Int. Cl.³ G02C *5/22*
U.S. Cl. 351—153 **23 Claims**



1. In a spectacle frame comprising a rim, a bow, and a hinge, said hinge comprising a rim-side part carried by said rim and a bow-side part carried by said bow and pivoted to said rim-side part,

said bow being pivotally movable relative to said rim from a closed position to a normal open position and being adapted to be forced open beyond said normal open position to a forced-open position in which said bow is adapted to bear resiliently on a head of a wearer, and

said frame comprising means which are interengageable to define said normal open position of said bow,

said bow-side part being engageable with said rim to limit the movement of said bow beyond said normal open position,

said rim-side part comprising a first eye formed as an angular member having first and second peripheral surfaces for cooperating with said bow-side part,

said bow-side part comprising a second eye which is pivoted to said first eye, and

said bow carrying means having an engaging surface which faces the periphery of said first eye and is engageable with said first and second peripheral surfaces as said bow is

opened to said normal open position and closed to said closed position, respectively,

the improvement residing in that

said hinge comprises a slidable plate, which is disposed on the outside of said bow and slidable relative to said bow-side part along the outside of said bow into and out of engagement with said rim, so that the outer surface of said hinge is slidingly covered by said slidable plate and the inside of said bow is substantially free from protrusions of said hinge,

said hinge comprises a spring, which is mounted in said bow-side part and arranged to urge said slidable plate into engagement with said rim when said bow is in said normal open position,

said slidable plate is arranged to move along said bow to the end thereof against the force of said spring as said bow is forced open beyond said normal open position,

said slidable plate being provided with a T-shaped guide bracket secured to and protruding inwardly therefrom, and

said frame comprising guide means carried by said bow-side part of said hinge and in guiding engagement with said guide bracket, so that said slidable plate is slidingly guided on the outside of said bow, and in parallel to the outer side of the bow, into and out of engagement with said rim.

4,461,549

LINE ADJUSTING AND LOCKING DEVICE FOR EYEGLASSES

Donald M. Reese, and Ida L. Reese, both of Palos Verdes, Calif., assignors to Suspension Eyewear Enterprises, Newport Beach, Calif.

Filed Jun. 2, 1982, Ser. No. 384,247
Int. Cl.³ G02C *5/14, 5/22*
U.S. Cl. 351—153 **22 Claims**

1. An adjusting and line locking device operatively associated with an earpiece member of a pair of eyeglasses, sunglasses, safety glasses and the like of the type having a pair of thin flexible lines which attach transparent members of the glasses to the earpieces, said device being adapted for adjustably attaching the lines to the earpiece member and comprising:

a slotted member fixedly connected to the earpiece and having a slot adapted for transversely accommodating the flexible lines, and

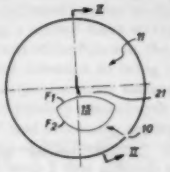
a locking member complementary to the slotted member and capable of being removably positioned on the slotted member, the locking member comprising means for substantially preventing movement of the flexible lines within the slot.

4,461,550

PROGRESSIVE OPHTHALMIC LENS

Serge Legendre, Cretell, France, assignor to Essilor International Cie Generale d'Optique, Echat, France

Filed Apr. 22, 1981, Ser. No. 256,291
Claims priority, application France, Apr. 30, 1980, 80 09757
Int. Cl.³ G02C *7/06*
U.S. Cl. 351—169 **5 Claims**



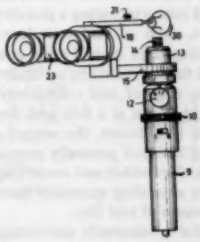
1. An ophthalmic lens comprising a substantially constant power zone, a variable power zone having a variable radius of curvature along at least one meridian of said lens, and an additional segment optically superposed on a portion of said variable power zone thereby providing a local addition of refractive power, said variable power zone comprising a transition zone of progressively variable power extending between said substantially constant power zone and said additional segment so as to form a reduced power discontinuity at the border between said transition zone and said additional segment.

4,461,551

PORTABLE OPHTHALMOLOGICAL INSTRUMENT FOR SELECTIVE EXAMINATION OF ANTERIOR OR POSTERIOR REGIONS OF THE EYE

Erich Blaha, Essingen, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed May 5, 1982, Ser. No. 375,296
Claims priority, application Fed. Rep. of Germany, May 27, 1981, 8115734[U]
Int. Cl.³ A61B *3/10*
U.S. Cl. 351—214 **5 Claims**



1. A portable ophthalmological instrument for selective examination of anterior or posterior regions of the eye, comprising an ophthalmoscopy light source in a tubular housing and having a deflection prism at its light-exit side, characterized by the fact that a stereomicroscope (23) is firmly connected with an arcuate guide (15) within which a sleeve (16) is displaceably supported, that said sleeve (16) is adapted for detachable assembly to part of the tubular housing (13) and that said sleeve carries a supplementary lens (18) which, upon such assembly, is positionable in front of the deflection prism (7) of the ophthalmoscopy light source (8), and that said light housing (8) is further provided with a selector means (12) for optionally bringing a circular diaphragm and at least one slit diaphragm (4) into the illumination-ray path.

having at least one tooth for locking engagement with said rack teeth and movable between a first position in positive locking engagement with said first locking member to lock the housing portions against movement relative to each other and a second position out of locking engagement with said first locking member to permit movement of the housing portions relative to each other;

spring means for urging said second locking member into locking engagement with said first locking member; and

means for engaging said second locking member for selectively moving said second locking member out of engagement with said first locking member, said engaging means including a control pin mounted on said another housing portion for movement into engagement with said second locking member, and support means for normally positioning said control pin in a retracted position with respect to said second locking member;

said support means including a button member carrying said control pin, and biasing means for urging said button member to a normal position with said control pin in said retracted position.

4,461,546

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C. Verne Muffoletto, 9411 Flagstone Dr., Baltimore, Md. 21234, and John B. Goodell, 1201 Southview Rd., Baltimore, Md. 21218

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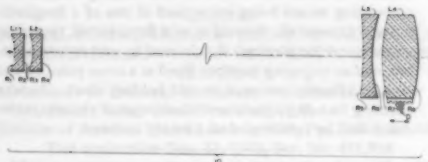
U.S. Cl. 350—453 **12 Claims**



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U.S. Cl. 350—580 **4 Claims**

1. The combination, comprising:

(A) a camera having a picture taking lens, said lens having an optical axis, said lens being shiftable in a direction perpendicular to said optical axis; and

(B) a lens hood including:

(1) a mounting section adapted to be mounted on a lens barrel of said picture taking lens; and

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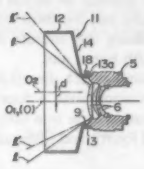

to said picture taking lens in such an orientation that said optical axis and said central axis are parallel to each other but spaced apart from each other by a distance less than the radius of said picture taking lens as measured along a direction to said optical axis.

4,461,548

SPECTACLE FRAME

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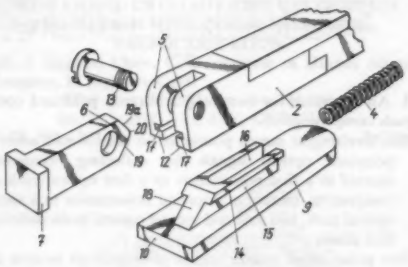
U.S. Cl. 351—153 **23 Claims**



1. In a spectacle frame comprising a rim, a bow, and a hinge,

said hinge comprising a rim-side part carried by said rim and a bow-side part carried by said bow and pivoted to said rim-side part,

said bow being pivotally movable relative to said rim from a closed position to a normal open position and being adapted to be forced open beyond said normal open position to a forced-open position in which said bow is adapted to bear resiliently on a head of a wearer, and

said frame comprising means which are interengageable to define said normal open position of said bow,

said bow-side part being engageable with said rim to limit the movement of said bow beyond said normal open position,

said rim-side part comprising a first eye formed as an angular member having first and second peripheral surfaces for cooperating with said bow-side part,

said bow-side part comprising a second eye which is pivoted to said first eye, and

said bow carrying means having an engaging surface which faces the periphery of said first eye and is engageable with said first and second peripheral surfaces as said bow is

opened to said normal open position and closed to said closed position, respectively,

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said hinge comprises a slidable plate, which is disposed on the outside of said bow and slidable relative to said bow-side part along the outside of said bow into and out of engagement with said rim, so that the outer surface of said hinge is slidingly covered by said slidable plate and the inside of said bow is substantially free from protrusions of said hinge,

said hinge comprises a spring, which is mounted in said bow-side part and arranged to urge said slidable plate into engagement with said rim when said bow is in said normal open position,

said slidable plate is arranged to move along said bow to the end thereof against the force of said spring as said bow is forced open beyond said normal open position,

said slidable plate being provided with a T-shaped guide bracket secured to and protruding inwardly therefrom, and

said frame comprising guide means carried by said bow-side part of said hinge and in guiding engagement with said guide bracket, so that said slidable plate is slidingly guided on the outside of said bow, and in parallel to the outer side of the bow, into and out of engagement with said rim.

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Filed Jun. 2, 1982, Ser. No. 384,247
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4,461,550

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Filed Apr. 22, 1981, Ser. No. 256,291
Claims priority, application France, Apr. 30, 1980, 80 09757
Int. Cl.³ G02C *7/06*
U.S. Cl. 351—169 **5 Claims**

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4,461,551

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Int. Cl.³ A61B *3/10*
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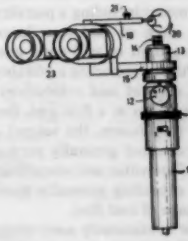

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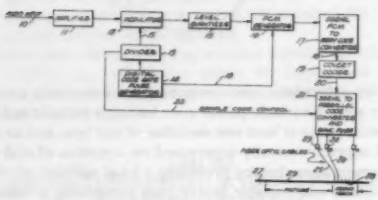
4,461,552

FILM SOUND TRACK RECORDING AND PLAYBACK SYSTEM

Arnold M. Levine, 10828 Fullbright Ave., Chatsworth, Calif. 91311

Continuation of Ser. No. 185,509, Sep. 9, 1980, abandoned. This application Aug. 4, 1982, Ser. No. 405,198
Int. Cl.³ G03B *23/08*
U.S. Cl. 352—27 5 Claims



1. A motion picture film sound track recording and playback system compatible with existing camera and projector film advance mechanisms, comprising:

first means responsive to a complex electric wave representative of sound to be recorded on said sound track for successively sampling the amplitude of said wave and for digitally encoding said samples successively, a continuous amplitude sample representing succession of parallel code words being thereby generated;

second means for recording said code words successively on said sound track as a pattern of light dots recorded on said film, said second means being located along the length of said film where the motion of said film is substantially continuous and linear with time as said film is advanced, said second means including a plurality of electric-to-light transducers, each of said transducers responding to a corresponding digit of said code generated by said first means, and further including a plurality of fiber optic light conductors, each of said conductors being arranged to receive light pulses at a first end, from a corresponding one of said transducers, the second end of said optical fibers being directed generally perpendicular to the surfaces of said film within said sound track in a close-spaced, linear array extending generally transverse to the direction of advance of said film;

third means for continuously converting said light dot patterns to digital codes in electrical form as said film is advanced for projection;

fourth means including a digital-to-analog converter for reproducing said samples from a corresponding code words series from said third means, and for combining said reproduced samples for reconstituting said complex wave;

fifth means responsive to said first means for rearranging the order of at least some of the bits of at least some of said code words according to a predetermined pattern for application to said second means;

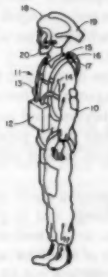
and sixth means responsive to said third means for again rearranging the order of said codes therefrom to reconstituted code words substantially the same as said code extant at the output of said first means, said sixth means applying a pattern which is the inverse of said fifth means predetermined pattern.

4,461,553

DYNAMIC HEAD MOTION MEASURING SYSTEM

Joseph E. Doerr, Albuquerque, N. Mex., and Tomas J. Bozack, Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 18, 1982, Ser. No. 389,807
Int. Cl.³ G03B *19/18, 21/32*
U.S. Cl. 352—39 8 Claims



1. A dynamic measuring system for the measurement of head motions of a person comprising:

A. A high speed camera having film, said camera for mounting upon the trunk of said person;

B. A form fitted helmet to be worn on the head of said person;

C. A target system mounted upon said helmet;

D. A pair of fiber-optic light guides connected to said camera and aligned on said target system from differing angles; and

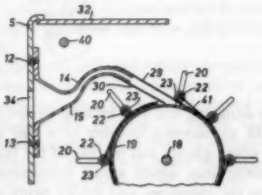
E. A pair of lenses connected to said fiber optic light guides to triangulate the target system, whereby triangulation permits a frame by frame measurement of head movement.

4,461,554

SELF-REELING CASSETTE DRIVEN BY THE MOTION OF AN INSERTED WEB

John Norris, Upton St. Leonards, and Otto C. Selden, London, both of England, assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Oct. 8, 1981, Ser. No. 309,628
Int. Cl.³ G03B *17/26*
U.S. Cl. 354—275 16 Claims



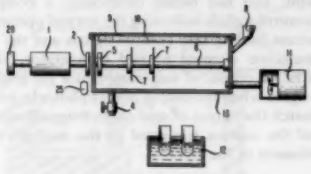
1. A cassette for the receipt of a web, including a box having a feed slot into the box, and with a drum mounted therein for rotational movement, said box having a guide means, forcing the web to be wound onto the drum as it is pushed into the cassette, said guide means including pulleys, the said pulleys carrying belts which pass around the drum and are in contact therewith, whereby the web is fed into a nip between the belts and the drum surface affecting rotation of the drum as the web is pushed into the cassette.

4,461,555

METHOD AND APPARATUS FOR PROCESSING AND DRYING PHOTOGRAPHIC DISC FILM

Roman Kuzyk, 55 Florister Dr., Hamilton Square, N.J. 08690, and William P. Zupko, 144 Edmund St., Trenton, N.J. 08610

Filed Mar. 23, 1983, Ser. No. 477,865
Int. Cl.³ G03D *3/04*
U.S. Cl. 354—299 7 Claims



1. An apparatus for processing and drying photographic disc film comprising in combination:

a film processing chamber constructed to accommodate a quantity of processing liquid, and having a liquid intake nozzle and a drain;

an opening in said chamber having a light- opaque closure;

a spindle interposed in said chamber for supporting and rotating at least one disc of photographic film;

a source of power including an on-off switch;

a motor constructed to drive said spindle to rotate at a first preselected speed of rotation;

magnetic coupling means;

said motor coupled by said magnetic coupling means in driving relation to said spindle through said magnetic coupling means;

a control circuit in circuit relation with said source of power for operating said motor which comprises in combination a timing circuit which is constructed to produce a timing signal to actuate said motor to shift said spindle to change the speed of rotation of said motor from said first speed of rotation to a second speed of rotation for a preselected period;

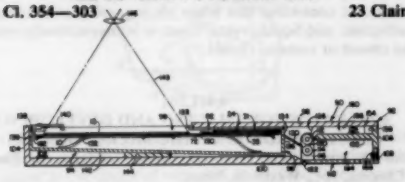
magnetic sensing means responsive upon the decoupling of said magnetic coupling means to recouple said motor in driving relation to said spindle.

4,461,556

FILM PROCESSING APPARATUS FOR SELF-PROCESSING FILM UNIT WITH A FOLDED APPLICATOR

Lawrence M. Douglas, South Easton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 30, 1982, Ser. No. 445,416
Int. Cl.³ G03B *17/52;* G03D *9/00*
U.S. Cl. 354—303 23 Claims



1. Processing apparatus for use with a self-processing film unit of the type including a sheet-like film component including one or more photosensitive layers and having an outer surface with a given area thereof that is configured to be wetted with a low viscosity processing liquid, following exposure of the one or more photosensitive layers, to initiate processing of the film component, and a liquid applicator attached to the film component and including an initially folded and releasably sealed enclosure section having therein means yieldably holding a substantially uniformly distributed supply of a low viscosity processing liquid, a leader tab forming section that is movable from an initial position to a position wherein it forms a leader tab in response to applying a first force to the film unit, and a ground section for mechanically grounding a predetermined portion of the enclosure section so that, in response to progressively applying a second force to the leader tab and then to following portions of the film unit, the folded enclosure section is unsealed and extended to bring it into overlying relation to the film component outer surface with the liquid holding means in liquid yielding contact with the given area to effect wetting thereof, said processing apparatus comprising:

means for supporting such a film unit;

means for applying such a first force to said film unit for effecting formation of the leader tab; and

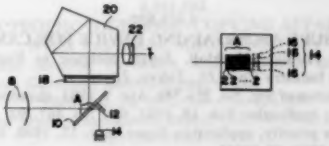
means for progressively applying such a second force to the leader tab and then to following portions of the film unit to effect unsealing of the enclosure section and its movement to the extended position to bring the liquid holding means into liquid yielding contact with the given area to effect wetting thereof.

4,461,557

MIRROR ARRANGEMENT FOR USE IN A SINGLE LENS REFLEX CAMERA

Kazuo Kimura, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 22, 1982, Ser. No. 421,054
Claims priority, application Japan, Sep. 22, 1981, 56-150115
Int. Cl.³ G03B *3/00, 19/12;* G02B *27/14*
U.S. Cl. 354—402 20 Claims



1. A mirror arrangement for use in a single lens reflex camera to divide a light transmitted through an objective lens into a first portion directed to a viewfinder and a second portion directed to a light receptor which detects a focusing condition of the objective lens or the like, comprising:

a total reflection mirror surface for reflecting a portion of the light transmitted through said objective lens to said viewfinder having a plurality of light transmitting slits, arranged in parallel to each other on said total reflection mirror surface, for directing another portion of the light transmitted through said objective lens to said light receptor, each of said slits having a width of less than 80 μ, each of the pitches between any two adjacent slits in a width direction thereof being more than two times the average of all said slits and being comprised of at least two different values.

4,461,558

ENDOSCOPIC PHOTOGRAPHING APPARATUS

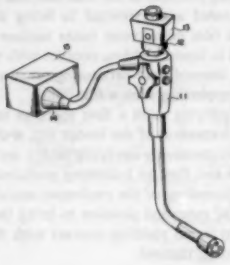
Kowji Tanikawa; Koichi Matsui, both of Tokyo; Tetsuya Kimura, Fujiyoshida; Takeshi Takamatsu, deceased, late of Hachioji, all of Japan, and by Tokuyuki Takamatsu, legal representative, Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 13, 1982, Ser. No. 407,881

Claims priority, application Japan, Aug. 17, 1981, 56-128444

Int. Cl.³ A61B *1/04, 1/06*

U.S. Cl. 354—416 **7 Claims**



1. An endoscopic photographing apparatus comprising:
an endoscope having an eyepiece section and connector;
an endoscopic camera unit attached to the eyepiece section of said endoscope;
a light supply unit connected to the connector of said endoscope and emitting light to be guided into the endoscope;
a control section having means arranged in at least one of said endoscopic camera unit and said light supply unit for discriminating the type of endoscopic camera unit or light supply unit, depending upon the presence and absence of a response signal, when one of said endoscopic camera unit and light supply unit receives the response signal, said endoscopic camera unit and light supply unit executing a first photographing mode, and when one of said endoscopic camera unit and light supply unit receives no response signal, said unit having the control section executing a second photographing mode corresponding to an operation sequency of the other unit being without control section.

4,461,559

EXPOSURE ASCERTAINING DEVICE FOR CAMERAS

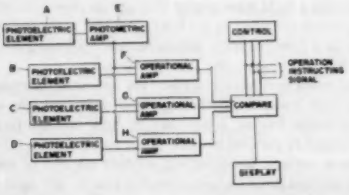
Fumiaki Hiraike, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 251,749, Apr. 7, 1981, abandoned. This application Feb. 18, 1983, Ser. No. 467,792

Claims priority, application Japan, Apr. 15, 1980, 55-48729; Apr. 15, 1980, 55-48732

Int. Cl.³ G03B *7/099, 17/18*

U.S. Cl. 354—432 **2 Claims**



1. In a camera, a movable element adapted to be moved from one position to another when the film is exposed, a photoelectric element positioned to receive the incident light advancing toward the film-set side of the camera and the photoelectric element is positioned at such a point as to change the amont of light received by the photoelectric element as said movable element moves from one position to the other, whereby the output of said photoelectric element is dependent upon the sequential operation of the movable element during exposure of the film, means measuring the output of said photoelectric element, means responsive to said output measuring means for ascertaining the movement of said movable element, and further means responsive to said last means for alerting a picture-taker of a possible malfunction in the movement of said movable element, said last means comprising a comparator, a source of control signals indicating the normal operation of the camera, means feeding said control signals and the output of said photoelectric element to said comparator, and means connected to the output of said comparator for producing an operative signal when the output of said photoelectric element does not match the output of said control signals, whereby the operator of the camera is alerted to the malfunction of the movable element of the camera.

4,461,560

PHOTOGRAPHIC INFORMATION DISPLAY DEVICE

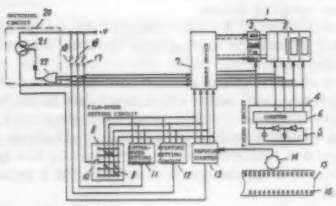
Tsunemi Yoshino; Hiroshi Iwata; Toshitsugu Kashihara, all of Nara, and Akitoshi Morioka, Osaka, all of Japan, assignors to West Electric Co., Ltd., Osaka, Japan

Filed Nov. 30, 1981, Ser. No. 326,111

Claims priority, application Japan, Dec. 2, 1980, 55-169816; Mar. 3, 1981, 56-30735

Int. Cl.³ G03B *17/18*

U.S. Cl. 354—475 **2 Claims**



1. A photographic information display device comprising a plurality of switching means each of which is activated in response to the setting of each of a plurality of photographic information items, a liquid-crystal display device which can store therein said plurality of photographic information items and which is disposed in the vicinity of a view finder of a camera or the like, a power supply which is connected through said plurality of switching means to said liquid-crystal display device, the viewing side of an eyepiece of said viewfinder of a camera or the like being covered with a liquid-crystal window of said liquid-crystal display device, said window being so driven and controlled that when photographic conditions are inadequate, said liquid-crystal window is intermittently opened and closed or remains closed.

4,461,561

APPARATUS FOR IMAGING AND DEVELOPING ELECTROPHOTOGRAPHIC MICROFORMATS

John D. Piumadore, Westfield, Mass., assignor to Photon Chroma, Inc., Westfield, Mass.

Filed Jul. 30, 1982, Ser. No. 403,807

Int. Cl.³ G03G *15/00*

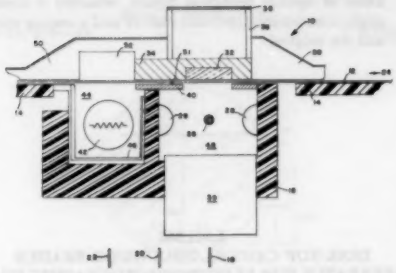
U.S. Cl. 355—3 R **11 Claims**

1. Apparatus for imaging and developing electrophotographic elements, comprising:
an electrophotographic element for having one or more image frames developed thereon;
a single module disposed adjacent to said electrophotographic element and including a first charge/exposure

station, a second tone/preliminary dry station, and a third final dry/fuse station;

said first, second, and third stations being compactly arranged with respect to each other so as to be disposed equidistantly apart at locations corresponding to the distance spacings defined between said one or more image frames defined upon said electrophotographic element;

means for causing relative movement between said electrophotographic element and said module; and



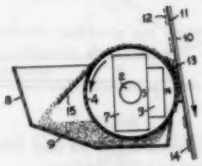
said stations being arranged in the order of said numerical order of said stations such that the processing of said electrophotographic element is attained by a unidirectional relative movement between said electrophotographic element and said module so as to facilitate the simultaneous processing of said one or more image frames in a time-staggered mode.

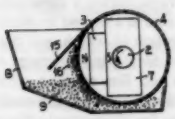
4,461,562

MAGNETIC TONER APPLICATOR

Arthur L. Goldfinch, Henley Beach, Australia, assignor to Better Methods, Inc., Secaucus, N.J.

Filed Oct. 28, 1982, Ser. No. 437,384
Claims priority, application Australia, Feb. 17, 1982, PF2751
Int. Cl.³ G03G *15/09*
U.S. Cl. 355—3 DD **6 Claims**





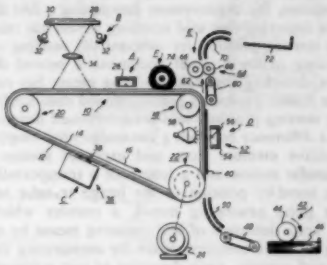
1. A magnet roll for the toning of electrostatic latent images comprising a central rectangular core with protruding spigots mounted at the centre of each end thereof and face magnetised permanent magnet segments centrally mounted on one rectangular face thereof, surrounded by a non-magnetisable cylindrical hollow shell mounted concentrically with said spigots and adapted to rotate about said spigots, characterised by said rectangular core with said face magnetised permanent magnet segments being rotatable to position said permanent magnet segments to face a member containing said electrostatic latent image on the surface thereof during toning of said electrostatic latent image and being rotatable to a position about 180° removed from said toning position whereby magnetic toner carried on said cylindrical hollow shell is removed from the surface of said cylindrical hollow shell in said toning position.

4,461,563

COPY SHEET CONTAMINATION PREVENTION

Kenneth C. Favata, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 22, 1982, Ser. No. 437,416
Int. Cl.³ G03G *15/00, 15/14*
U.S. Cl. 355—3 TR **20 Claims**



1. An apparatus for transferring an electrically charged toner powder image from a photoconductive member to a sheet of support material having particle contaminants, including:

means for applying an electrical charge to the sheet of support material of a polarity opposite in polarity to the polarity of the charge on the toner powder image so as to attract the toner powder image from the photoconductive member to the sheet of support material with the particle contaminants of the sheet of support material being attracted from the sheet of support material to the photoconductive member; and

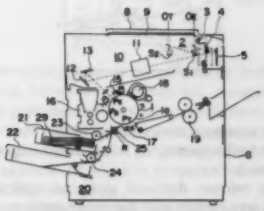
means for inducing a charge on the contaminants attracted from the sheet of support material to the photoconductive member of the same polarity as the polarity of the charge on the toner powder image causing the contaminants to be attracted back to the sheet of support material.

4,461,564

ELECTROPHOTOGRAPHIC COPYING APPARATUS WITH VARIABLE MAGNIFICATION

Yoshikazu Ikenoue, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 27, 1982, Ser. No. 424,495
Claims priority, application Japan, Oct. 14, 1981, 56-164485
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—8 **22 Claims**



1. In an electrophotographic copying apparatus with variable magnification, which includes a photosensitive member driven at a predetermined speed so as to sequentially pass an

exposure station, a developing station and an image transfer station, a scanning means for scanning an original document at a speed corresponding to a copying magnification, a projecting means for projecting light image of the original document scanned by said scanning means onto the exposure station of the photosensitive member so as to form an electrostatic latent image corresponding to the original document on said photosensitive member, a developing means for developing said electrostatic latent image into a toner image, means for transporting a copy material towards the image transfer station from a predetermined stand-by position, and means for transferring the toner image on the photosensitive member onto the copy material fed by said transporting means at the image transfer station, the improvement comprising a first detecting means for detecting that said scanning means has reached an exposure starting position for substantially starting exposure and scanning of the original document, a second detecting means for detecting that said scanning means has reached a particular position spaced a predetermined distance from said exposure starting position, said predetermined distance being equal to a difference between a circumferential length of said photosensitive member from said exposure station to said image transfer station and a length of a transportation path from the stand-by position to the image transfer station, a reference pulse generating means, a counter which starts counting upon detection of said scanning means by said first detecting means, a memory means for memorizing the count value of said counter, upon detection of said scanning means by said second detecting means at least at a particular 1× magnification mode, and a control means for actuating said transporting means upon coincidence of the count value of said counter with the memorized value of said memory means during the scanning by said scanning means in a copying mode at magnification other than the 1× magnification, whereby a leading edge of the copy material being transported is registered with a leading edge of said toner image on said photosensitive member at said image transfer station irrespective of copying magnifications.

4,461,565

OPTICAL SCANNING DEVICE

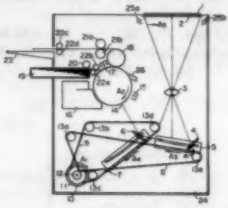
Yu Yamada, Kokubunji, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 359,032, Mar. 17, 1982, abandoned, which is a continuation of Ser. No. 136,180, Mar. 31, 1980, abandoned. This application May 20, 1983, Ser. No. 495,733

Claims priority, application Japan, Apr. 16, 1979, 54-46204; Apr. 16, 1979, 54-46205

Int. Cl.³ G03G *15/28*

U.S. Cl. 355—8 **5 Claims**



1. An optical scanning device comprising:

a lens system for projecting an image of an original onto an image surface;

two scanning mirrors disposed along an optical path between said lens system and the image surface;

two mirror supports for said scanning mirrors, said supports being movable rectilinearly at predetermined constant speeds in different directions, each of said mirror supports including holding means for holding thereon an associated one of said scanning mirrors for relative movement between the associated one of said scanning mirrors and its mirror support while maintaining a constant angle therebetween;

driving means for driving said two mirror supports; and

means for controlling the movement of said scanning mirrors in cooperation with said holding means such that during movement of said mirror supports said scanning mirrors are moved respectively along predetermined quadratic curves each substantially corresponding to a locus of optical reflection points, whereby a constant angle is maintained between each of said scanning mirrors and the original.

4,461,566

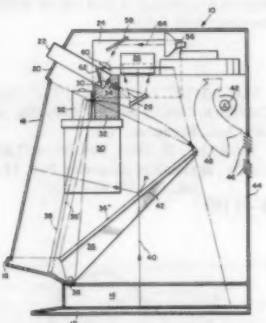
DESK-TOP CAMERA/PROCESSOR-READER APPARATUS FOR ELECTROPHOTOGRAPHIC FILM

John D. Plumadore, Westfield, Mass., assignor to Photon Chroma, Inc., Westfield, Mass.

Filed Dec. 10, 1982, Ser. No. 448,765

Int. Cl.³ G03B *13/28*

U.S. Cl. 355—45 **20 Claims**



1. A camera/processor-reader for film, comprising:

means for supporting a film medium;

means located at a first location for supporting a document to be photographically recorded upon said film medium as an image cell frame during a camera/processing mode;

screen means, located at a second location different than that of said first location at which said document supporting means is located, for having the image of said document as recorded upon said film medium within said image cell frame projected thereon during a reading-viewing mode;

illumination means for alternatively illuminating said document and said film medium during said camera/processing and reading-viewing modes, respectively;

optical means, all of the components of which are utilized within both the camera/processing and reading-viewing modes, for defining an image transmission path between said document and said film medium, and between said film medium and said projection screen; and

means copperating with said optical means for determining the transmission of said images either from said document to said film medium or from said film medium to said projection screen during said camera/processing and reading-viewing modes.

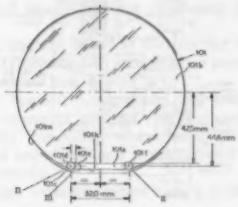
4,461,567
METHOD OF AND APPARATUS FOR THE POSITIONING OF DISK-SHAPED WORKPIECES, PARTICULARLY SEMICONDUCTOR WAFERS

Herbert E. Mayer, Eschen, Liechtenstein, assignor to Censor Patent- und Versuchs-Anstalt, Vaduz, Liechtenstein

Continuation-in-part of Ser. No. 220,451, Dec. 29, 1980, Pat. No. 4,376,581, which is a continuation-in-part of Ser. No. 188,539, Sep. 18, 1980, abandoned. This application Sep. 28, 1982, Ser. No. 426,111

Int. Cl.³ G03B *27/52*

U.S. Cl. 355—41 **6 Claims**



1. A method of preparing a semiconductor wafer for the formation of a pattern of circuit elements at predetermined locations on a surface thereof by selective illumination of a photosensitive layer on such surface through a mask in an exposure station after orthogonal and angular prealignment of the wafer in a prepositioning station,

comprising the steps of:

(a) providing the wafer with a peripheral edge having a distinctive portion and with a relatively wide surface marking and a multiplicity of relatively narrow optical surface markings inwardly from said edge;

(b) coarsely prealigning the wafer in the prepositioning station by optical detection of said distinctive edge portion and of said relatively wide surface marking;

(c) transferring the wafer to the exposure station with the orientation imparted thereto in the prepositioning station; and

(d) more precisely adjusting the wafer in said exposure station by optically detecting said relatively narrow surface markings.

4,461,568
ASSESSING THE COLOR OF GEMSTONES AND THE LIKE

Christopher M. Welbourn, "Oswald", London Rd., Sunningdale, Berkshire; Robert W. Ditchburn, 9, Summerfield Rise, Goring-on-Thames, Reading, Berkshire, and Andrew D. G. Stewart, The Old Rectory, Ashampstead, Reading, Berkshire, all of England

Filed Jun. 10, 1981, Ser. No. 272,287

Int. Cl.³ G01J *3/50*

U.S. Cl. 356—30 **15 Claims**

1. Apparatus for assessing the colour of gemstones and the like, comprising:

a chamber having diffusely reflecting internal walls of a colour appropriate to the colour of said gemstones;

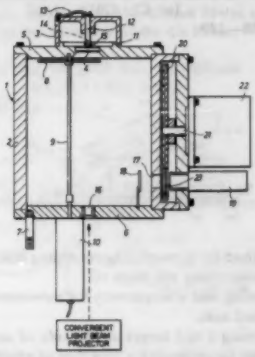
means for mounting a gemstone in the chamber;

means for projecting a converging beam of light onto the stone;

an interrupting member for regularly interrupting the path of the light beam shortly before it reaches the stone, the member having an interrupting surface which is within the chamber when it interrupts the light path, the interrupting surface being immediately adjacent the position of the gemstone when the interrupting surface interrupts the light path;

drive means connected to the interrupting member for driving the interrupting member to regularly interrupt the light path;

substantially the entire structure of the interrupting member, and its connection to the drive means, that is within said chamber having diffusely reflecting surfaces of said appropriate colour; and



means for detecting the colour of the light diffusely reflected from the internal wall of the chamber when the light path is interrupted and when the light path is not interrupted, the detecting means being arranged so that substantially all light detected has suffered at least one diffuse reflection.

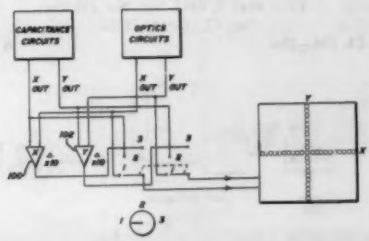
4,461,569
CONCENTRICITY GAGE

James O. Corbett, Eustis, Fla., assignor to The Electron Machine Corporation, Umatilla, Fla.

Filed Jan. 7, 1982, Ser. No. 337,621

Int. Cl.³ G01N *21/89*; G01R *27/26*; B29F *3/10*

U.S. Cl. 356—72 **3 Claims**



1. A non-contact gage for continuously indicating concentricity errors between an unexposed elongated electrically conductive core member having an insulation coating thereon as said member passes through said gage comprising:

optical scanning means for generating a first electrical signal, the magnitude of which is proportional to the position of the insulation coating;

capacitive means for simultaneously generating a second electrical signal, the magnitude of which is proportional to the position of said unexposed conductive core; and

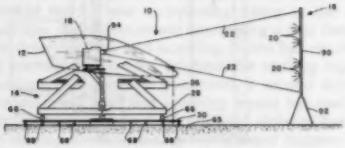
means for comparing said signals to yield a difference signal proportional to any error of concentricity between said core and coating.

4,461,570

METHOD FOR DYNAMICALLY RECORDING DISTORTION IN A TRANSPARENCY

Harry L. Task, Dayton, and Louis V. Genco, Enon, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 9, 1982, Ser. No. 386,488
Int. Cl.³ G01N 21/00
U.S. Cl. 356—239 6 Claims



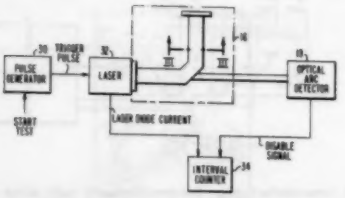
1. A method for dynamically recording distortion in a transparency, comprising the steps of:
(a) mounting said transparency for movement about a predetermined axis;
(b) disposing a test target at one side of said transparency, said test target having a plurality of small target elements mounted thereon in a predetermined array;
(c) disposing a camera at a side of said transparency opposite to said one side thereof;
(d) aiming said camera toward said test target so as to place said array of target elements within its field of view through said transparency; and
(e) operating said camera in a time exposure mode for a predetermined period of time as said transparency is moved through a predetermined angle over the same period of time such that a photographic record of distortion at a plurality of regions in said transparency is produced.

4,461,571

TEST SYSTEM FOR WAVE GUIDE ARC DETECTOR CIRCUITS

Richard H. Killion, Cockeysville, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 5, 1982, Ser. No. 375,250
Int. Cl.³ G01N 21/00
U.S. Cl. 356—256 6 Claims



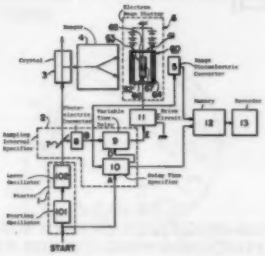
1. Apparatus for testing a wave guide arc detecting circuit comprising:
(a) a section of wave guide;
(b) a source for generating a simulated arc comprising a pulse of optical energy in response to a trigger signal;
(c) means for coupling said simulated arc to said section of rectangular wave guide;
(d) means for coupling said arc detecting circuit to said section of wave guide such that the optical path between said simulated arc and said arc detecting circuit is substantially unobstructed.

4,461,572

INSTRUMENT FOR MEASURING LIGHT EMISSION INDUCED BY REPETITIVE STIMULATION OF THE SAME TYPE

Yutaka Tsuchiya, Hamamatsu, Japan, assignor to Hamamatsu TV Co., Ltd., Hamamatsu, Japan

Filed Feb. 24, 1982, Ser. No. 351,620
Claims priority, application Japan, Sep. 4, 1981, 56-139584
Int. Cl.³ G01N 21/64
U.S. Cl. 356—318 11 Claims



1. An instrument for measuring light emission induced by repetitive stimulation of the same type comprising:
an electron beam shutter tube including a photoelectric layer, channel plates having a plurality of electron beam paths, a phosphor screen and a shutter electrode for generating a shuttering electric field perpendicular to said electron beam paths;
starting means for successively starting said light emission at timing intervals much longer than the sustaining time of said light emission;
imaging means for forming an image of said light emission initiated by said starting means on the photoelectric layer of said electron beam shutter tube;
sampling interval specifying means for generating signals specifying different sampling intervals for different types of light emission upon detecting the start of said light emission;
a shutter tube driving device for driving said shutter tube so as to cut the shuttering electric field at said sampling intervals;
a photoelectric converter located facing the phosphor screen of said shutter tube, said photoelectric converter converting bright spots on said phosphor screen into corresponding electric signals at said sampling intervals;
transferring means for transferring the output of said photoelectric converter before the next sampling operation starts; and
means for storing or displaying the output of said transferring means.

4,461,573

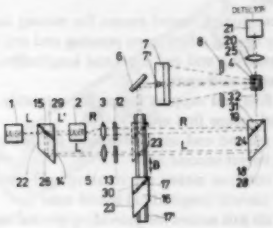
SPECTRAFLUOROMETER ARRANGEMENT

Hartmut Lucht, 12, Semmonenweg, 1185 Altglienicke, Berlin, and Reiner Wendt, 11, Altheiderstr., 1199 Berlin, both of German Democratic Rep.

Filed May 18, 1982, Ser. No. 378,494
Claims priority, application German Democratic Rep., Jun. 10, 1981, 230691
Int. Cl.³ G01N 21/64
U.S. Cl. 356—318 4 Claims

1. A spectral fluorometer arrangement for the qualitative and quantitative determination of a luminescence radiation emitted from a sample material,
comprising in mutual optical alignment,
a laser for emitting a first laser beam,
a beam splitter including a first partially reflective,

partially transmissive beam splitting face arranged in and inclined relative to said laser beam by substantially 45°,
said beam splitter having a further inclined and reflective face in spaced substantially parallel relation to said first beam splitting face,
said beam splitter being for splitting said laser beam into a first beam portion and into a second beam portion,
a dyestuff laser,
at least one first optical beam focusing means,
at least one second beam focusing means,
first and second beam intensity controling means,
a first beam fusing and deviating means,
a second beam fusing and deviating means,
said first beam portion being for pulsing said dyestuff laser,
said dyestuff laser being for producing a second laser beam,
said beam splitting face and said further reflective face being for directing said second beam portion in parallel to said second laser beam,
said first beam focusing means and said second beam focusing means, and said first and said second beam intensity controling means being arranged in said second laser beam and in said second beam portion, respectively,
a wavelength variation means having a central opening, and
an axis of rotation,
said axis of rotation being horizontal and at right angles to said first laser beam,



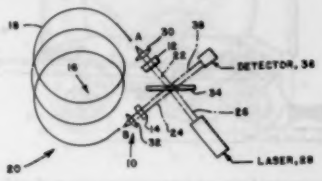
a sample material to be analysed,
a beam directing means,
a first detector means,
a second detector means,
a means for displacing said first beam fusing and deviating means into and out of, respectively, said second laser beam and said second beam portion,
said second beam fusing and deviating means being arranged subsequent to said first beam fusing and deviating means and adjacent said sample material,
said first beam fusing and deviating means being for fusing and directing said second laser beam and said second beam portion through said opening of said wavelength variation means upon said sample material, said second beam fusing and deviating means, when said first beam fusing and deviating means being removed from said second laser beam and said second beam portion,
being for directing said second laser beam and said second beam portion to said sample material,
said second laser beam and second beam portion being for producing a first and a second luminescent radiation of said sample material,
said first and said second luminescent radiation including a right angle,
said wavelength variation means and said beam directing means being for directing said first luminescent radiation to said first detector means,
said second detector means being arranged subsequent to said sample material,
said second detector means being for detecting said second luminescent radiation from said sample material.

4,461,574

ENVIRONMENTALLY INDEPENDENT FIBER OPTIC ROTATION SENSOR

Herbert J. Shaw, Stamford, Calif., and Herve J. Arditty, Le Chesnay, France, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 18, 1979, Ser. No. 105,043
Int. Cl.³ G01C *19/64*
U.S. Cl. 356—350 **9 Claims**



1. In a fiber optic rotation sensor having an electromagnetic source of energy for providing a beam of electromagnetic radiation, means optically aligned with said electromagnetic beam for dividing said beam of electromagnetic radiation into a first and a second beam of electromagnetic radiation, a fiber optic loop having a first and a second end, said first and said second ends of said fiber optic loop being optically aligned with said first beam and said second beam of electromagnetic radiation, respectively, means optically aligned with said first beam and said second beam of electromagnetic radiation for coupling said first beam and said second beam of electromagnetic radiation to said fiber optic loop and a detector optically aligned with sampled beams of electromagnetic radiation received from said fiber optic loop ends for measuring the instantaneous relative phase shift between said first beam and said second beam and providing an output representative of the rotation of said sensor, the improvement therein comprising: means interposed between said coupling means and said dividing means and in optical alignment with said first beam and said second beam of electromagnetic radiation, respectively, for passing the co-polarized waves of said first beam and said second beam therethrough while rejecting the cross-polarized waves of said beams in order for said fiber optic loop to act as a reciprocal element and render said output so as to be unaffected by surrounding environmental conditions; and means associated with said first end and said second end of said fiber optic loop for substantially preventing back reflections produced at each end thereof by said first beam and said second beam from reaching said detector.

4,461,575

REFERENCE MARKER/CORRELATION SCHEME FOR OPTICAL MEASUREMENTS

Miller, Jr., Warren H., and Wilson E. Taylor, both of Palm Bay, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Sep. 17, 1981, Ser. No. 303,181
Int. Cl.³ G01B *11/10*
U.S. Cl. 356—386 **18 Claims**

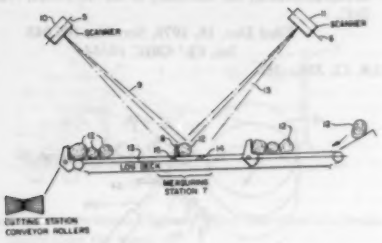
1. A method for establishing the position of an image of an object with respect to a reference image position wherein the object and an optical detector through which the image is obtained are subject to relative motion, comprising the steps of:

(a) providing, adjacent to said object, a reference pattern, to be viewed by said optical detector during the generation

of an image of said object, so that an image of said reference pattern is also generated thereby;

(b) storing first data representative of a known position of said reference pattern;

(c) comparing second data representative of said image of said reference pattern with said stored first data to determine whether or not said first and second data are aligned with one another; and



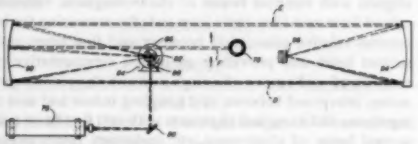
(d) adjusting said second data representative of said image of said reference pattern relative to said first data until the comparison step (c) indicates that said first and second data are aligned with one another, whereby the position of the image of said object is established with respect to said reference image position.

4,461,576

OPTICAL MEASURING SYSTEM

Charles King, Elmira, N.Y., assignor to Courser Incorporated, Elmira, N.Y.

Filed Feb. 18, 1981, Ser. No. 235,400
Int. Cl.³ G01B *11/04*
U.S. Cl. 356—375 **23 Claims**



1. An optical measuring system for measuring a dimensional parameter of a workpiece lying in the path of a beam of light, comprising:

(a) at least one fixed, parabolic mirror;

(b) a rotatably mounted plane mirror for reflecting a beam of light directed upon a predetermined portion thereof in a circular path, said predetermined portion of said plane mirror being at the focal point of said parabolic mirror;

(c) means for directing a beam of light along a predetermined path which includes both the workpiece and said predetermined portion of said plane mirror;

(d) light-responsive means for generating electrical signals in response to said beam of light impinging thereon, said parabolic and plane mirrors and said predetermined path of said beam being so related that variations in a dimensional parameter of a workpiece produce corresponding variations in said electrical signals; and

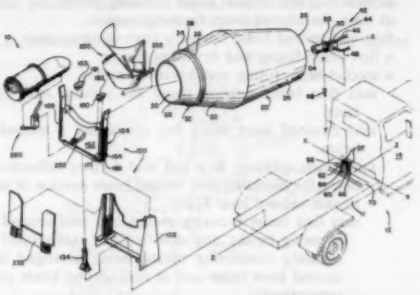
(e) signal processing means adapted to electronically relate said electrical signal to the dimensional parameter to provide a measurement thereof, said signal processing means including ramp generating means producing a reference signal, and ramp level sampling means responsive to said electrical signal to sample said reference signal in accordance with the dimensional parameter being measured.

4,461,577

VARIABLE HEIGHT CONCRETE TRUCK

Raymond W. Mechem, 5385 Kewanee Dr., Boulder, Colo. 80303

Filed May 25, 1983, Ser. No. 498,139
Int. Cl.³ B01F *9/02*
U.S. Cl. 366—55 **34 Claims**



1. A relatively small variable height concrete truck for use and storage in restricted height environments comprising:

truck body means having a forward end and a rear end and a longitudinal axis extending therebetween for transportably supporting a concrete mixing barrel on a frame portion thereof;

concrete mixing barrel means for mixing and pouring concrete having a first open pouring end and a second closed nonpouring end and a central longitudinal axis extending between said ends;

barrel first end support means for rotatably supporting said barrel means first end;

barrel second end support means for rotatably supporting said barrel second end;

barrel rotation means for rotating said barrel means about said central longitudinal barrel axis;

barrel tilt axis means for providing pivotal movement of said barrel about a tilt axis at said barrel second and;

barrel elevation means for raising or lowering said barrel first end by pivotal movement of said barrel about said barrel tilt axis;

said barrel means comprising a lowered position wherein said barrel first end is positioned at a first distance above said truck body means frame portion and a raised position wherein said barrel first end is positioned at a second distance above said truck body means frame portion wherein said second distance is substantially greater than said first distance.

4,461,578

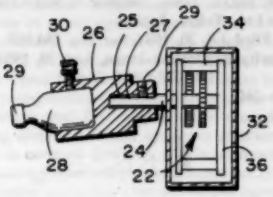
METHOD AND APPARATUS FOR AUTOMATICALLY STIRRING INSULIN

Robert H. Tiebout, 6443 Anguilla, Cypress, Calif. 90630

Filed Oct. 1, 1982, Ser. No. 432,338
Int. Cl.³ B01F *9/02*
U.S. Cl. 366—213 **2 Claims**

1. A method for stirring an insulin suspension in a container comprising positioning said container of insulin suspension on its side in a receptacle which is mounted on a drive shaft and which maintains said insulin suspension container offset at an acute angle of between about 0.5° and about 15° relative to alignment with said drive shaft, and rotating said drive shaft at

a speed of between about 40 and about 100 revolutions per minute to thereby simultaneously turn said insulin suspension



container in rotation and cyclically rock said container relative to said drive shaft.

4,461,579

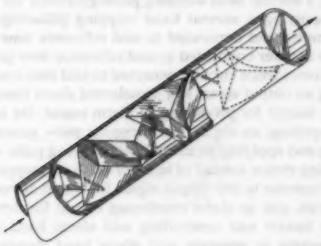
MOTIONLESS MIXER COMBINATION

Henry McCallum, Mississauga, Canada, assignor to Statiflo, Inc., Markham, Canada

Continuation-in-part of Ser. No. 288,846, Jul. 31, 1981, abandoned. This application May 6, 1983, Ser. No. 492,384

Int. Cl.³ B01F *5/00*

U.S. Cl. 366—337 **12 Claims**



1. A motionless mixer combination for insertion into a conduit together with means for forcing a fluid containing materials to be mixed, through the conduit, comprising:

(a) a plurality of first basic mixer components comprising:

(1) a flat base plate in the form of an isosceles triangle;

(2) a pair of flat vanes connected respectively to the legs of the triangle at equal and opposite angles to the plane of the base plate; and,

(3) the vanes terminating at a transverse end line defined by the intersection of the plane of the vanes and a plane normal to the plane of the base plate parallel to its base, passing through the apex of the triangle, and the outer edges of the vanes following the contour of the inner surface of said conduit;

(b) a plurality of second basic mixer components of identical construction to the first basic mixer components except that the vanes are connected at opposite angles to the base plates; and

(c) means for positioning a first basic mixer component in the conduit in a downstream relation and substantially orthogonally to a second basic mixer component;

whereby said basic mixer components provide equally resistant, substantially helical flow paths for the fluid on each side of said components with the direction of flow being substantially parallel to the line of any included angle formed by the intersection of the plane of the vanes and the wall of the conduit, and substantially transverse to the line of any reflex angle formed thereby, and whereby the fluid passing the free end line of the upstream component undergoes a splitting and a fluid shearing action along a transverse line as it passes into the downstream component.

4,461,580

WATCH, THE BACK COVER OF WHICH CONSTITUTES A PLATE

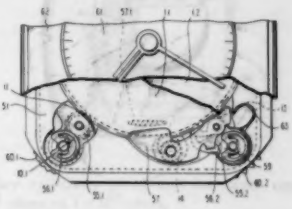
Raoul-Henri Erard, La Chaux-de-Fonds, Switzerland, assignor to Sintel S.A., La Chaux-de-Fonds, Switzerland

Filed May 12, 1981, Ser. No. 263,019

Claims priority, application Switzerland, May 9, 1977, 5796/77

Int. Cl.³ G04B *19/20*

U.S. Cl. 368—77 **7 Claims**



1. In a watch having a back cover which carries a middle bezel and constitutes a plate on which are assembled the different elements of the movement, the watch having a crystal and hands that swing about an axis, a main spring to drive the watch, and an escapement wheel whose intermittant rotation is controlled by an oscillating balance; the improvement comprising a minute disc below the crystal and concentric to said axis, the minute disc having a toothing on its periphery and a minute mark, an hour disc having a toothing on its periphery and an hour mark and fixed to a core driven by said main spring, the main spring being located between the hour disc and said back cover, a toothed ratchet crown disposed concentrically to and below the hour disc, the outer part of the main spring being fixed within the ratchet crown whereby the main spring is wound when the ratchet crown is rotated in one direction, a drive train between the hour disc and the minute disc, by which the minute disc is driven, the drive train being located beneath the hour disc, the drive train including a wheel that maintains the oscillation of the balance, and a time-setting member permitting the securement of the ratchet crown and the hour disc together to control manually the displacement of the hour disc upon setting the watch but without modification of the amount of winding of the main spring.

4,461,581

LIGHT BEAM CLOCK

Jerome H. Simon, 17 Hubbard Ave., Cambridge, Mass. 02140

Continuation of Ser. No. 146,345, May 5, 1980, Pat. No. 4,374,623. This application Dec. 3, 1981, Ser. No. 326,847

Int. Cl.³ G04B *19/00*

U.S. Cl. 368—79 **6 Claims**

1. A light beam clock comprising:

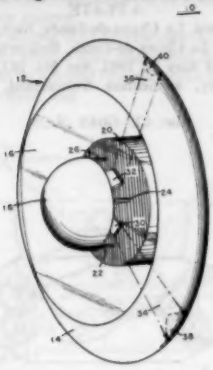
a clock drive motor including a first member rotatable about the clock axis at the speed of one-twelfth revolution per hour;

light source means for providing a beam of light and directing said beam of light axially, centrally toward said members;

a circumferential portion;

a beam memchanism including a first optical device which includes a mirror mounted with said first member in said beam of light for receiving said axial beam of light from the light source means and redirecting it in a first radial beam to form a first spot of light representing minutes on said circumferential portion and a second optical device which includes a mirror mounted with said second mem-

ber in said beam of light for receiving said axial beam of light from said light source means and redirecting it in a



second radial beam to form a second spot of light representing hours on said circumferential portion.

4,461,582

CIRCUIT ARRANGEMENT FOR ADJUSTING A PULSE FREQUENCY OF A QUARTZ-CONTROLLED WATCH OR CLOCK

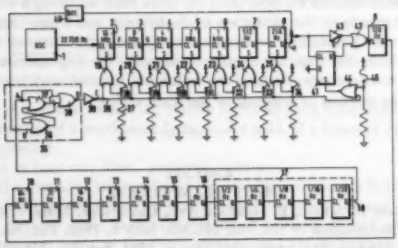
Henry Walther, Wiesbaden-Nordenstadt, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 20, 1982, Ser. No. 410,115

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1981, 3135228

Int. Cl.³ G04B *17/12*

U.S. Cl. 368—201 **6 Claims**



1. In a circuit arrangement for adjusting a pulse frequency of a quartz-actuated clock or watch, the circuit arrangement having a pulse generator, a counter, a multi-stage frequency divider having a plurality of frequency-divider stages arranged behind said pulse generator and in front of said counter, adjustable means for adding clock pulses in front of at least one predeterminable stage of said frequency-divider during a counting cycle, and adjustable means for suppressing a clock pulse in a counting cycle between frequency-divider stages of lower frequency of said plurality of stages, the improvement wherein said plurality of frequency divider stages includes

a plurality of higher-frequency frequency-divider stages comprising fixed, settable counters and wherein the adjustable means for suppressing a clock pulse is arranged between one of said settable counters and the next following frequency divider stage of said plurality of stages.

4,461,583

ALARM ELECTRONIC TIMEPIECE HAVING A STEPPING MOTOR

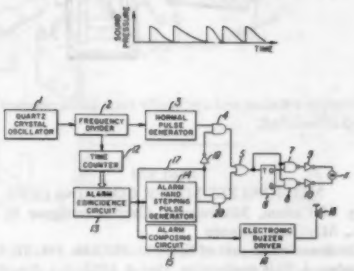
Nobuo Obara, Tokyo, Japan, assignor to Seiko Instruments & Electronics Ltd., Tokyo, Japan

Filed Jul. 20, 1981, Ser. No. 284,965

Claims priority, application Japan, Aug. 20, 1980, 55-114164

Int. Cl.³ G04B *23/00*

U.S. Cl. 368—260 **4 Claims**



1. In an alarm electronic timepiece having a reference time generator, a normal hand stepping pulse generator for producing and applying a normal hand stepping pulse signal to a stepping motor and connected to said reference time generator, a time counter connected to said reference time generator, an alarm coincidence circuit connected to said time counter for producing an output signal at a preselected alarm time, and an electronic buzzer for producing an alarm sound, the improvement comprising: an alarm hand stepping pulse generator for producing and applying an alarm hand stepping pulse signal to said stepping motor instead of said normal hand stepping pulse signal in response to the output signal from said alarm coincidence circuit, and an alarm composing circuit for driving the electronic buzzer and controlling said alarm hand stepping pulse generator to generate said alarm hand stepping pulse approximately at the lowest value portion of the alarm sound pressure of the alarm sound in response to the output signal from said alarm coincidence circuit.

4,461,584

ELECTRONIC CLINICAL THERMOMETER

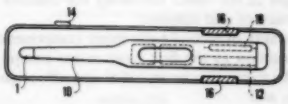
Masakazu Murase, Fuji, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1982, Ser. No. 418,287

Claims priority, application Japan, Dec. 28, 1981, 56-214320

Int. Cl.³ G01V *1/28*

U.S. Cl. 374—188 **4 Claims**



1. An electronic clinical thermometer which comprises:

temperature sensing means for producing an output signal commensurate with temperature;

decision means for discriminating, on the basis of the output signal of said temperature sensing means, a temperature above a predetermined threshold temperature as well as a rising temperature gradient over a predetermined period of time, said decision means first discriminating a temperature above the threshold temperature and then discriminating a rising temperature gradient from said discriminated temperature; and

measuring means placed in a measurement start mode by a discrimination signal from said decision means for initiating a temperature measurement on the basis of an input from said temperature sensing means;

said decision means comprising an up/down counter for producing an ouput signal commensurate with a temperature sensed by said temperature sensing means; and a decoder for producing a first output signal in response to an input signal from said up/down counter indicative of a count corresponding to a temperature above the threshold temperature, said first output signal changing over the counting direction of said up/down counter so that said counter is counted down by a value commensurate with temperature within said predetermined period of time, and said decoder producing a second output signal in response to an input signal from said up/down counter indicative of a count corresponding to a rising temperature gradient of a magnitude larger than that of a predetermined rising temperature gradient, said second output signal establishing the measurement start mode.

4,461,585

SLEEVE BEARING COMPOSED OF HALFSHELLS HAVING DIFFERENT ECCENTRICITIES

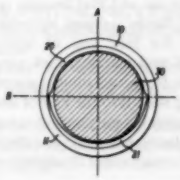
Duraid Mahrus, and Antonio P. Lourenco, both of Sao Paulo, Brazil, assignors to Metal Leve S.A., Brazil

Filed Dec. 20, 1982, Ser. No. 451,410

Claims priority, application Brazil, Dec. 23, 1981, 8108360

Int. Cl.³ F16C *33/04*

U.S. Cl. 384—288 **6 Claims**



1. A sleeve bearing for use with connecting rods, said connecting rods including a main body having a centerline defined along a longitudinal axis of said main body, a first half shell defined at one end of said main body, and a bearing cap having a second half shell therein, said bearing cap being coupled to said first half shell, said first and second half shells being adapted to receive a journal member of a crankshaft therebetween, wherein;

said first half shell has substantially no eccentricity and a substantially constant clearance between said half shell and said journal member; and

said second half shell has an inner eccentricity defined to have a clearance from said journal member at said center line substantially equal to said first half shell clearance, said clearance increasing away from said center line.

4,461,586

INK RIBBON FOR USE IN ELECTROTHERMIC NON-IMPACT RECORDING

Toshiyuki Kawanishi, and Yukio Tabata, both of Numazu, Japan, assignors to Ricoh Company, Ltd., Japan

Filed May 19, 1982, Ser. No. 379,871

Claims priority, application Japan, May 20, 1981, 56-76120; May 20, 1981, 56-76121; Jun. 5, 1981, 56-87393

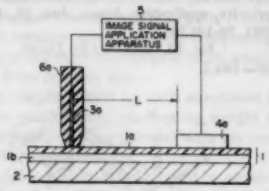
Int. Cl.³ B41J *3/20, 3/10*

U.S. Cl. 400—120 **8 Claims**

1. An ink ribbon for use in electrothermic non-impact recording employing a stylus and return electrode comprising:

an electroconductive base layer with which the stylus comes into contact comprising a binder resin and an electroconductive material dispersed uniformly in said binder resin, the surface resistivity ρb of said base layer ranging from 1×10^3 ohms to 1×10^6 ohms, and

an electroconductive ink layer comprising a thermoplastic material and an electroconductive material uniformly dispersed in said thermoplastic material, said ink layer directly formed on said base layer, said ink layer being thermal-transferable when heated by Joules heat above a predetermined temperature,



the surface resistivity ρi of said ink layer ranging from 1×10^2 ohms to 1×10^5 ohms,

with said surface resistivity ρb of said base layer being greater than the surface resistivity ρi of said ink layer, and with the softening or melting point (Tm1) of said binder resin of said base layer being higher than the softening or melting point (Tm2) of said thermoplastic material of said ink layer.

4,461,587

EMBOSSING MACHINE HAVING A MOVABLE CARRIAGE FOR CHARACTER AND LIKE SPACING

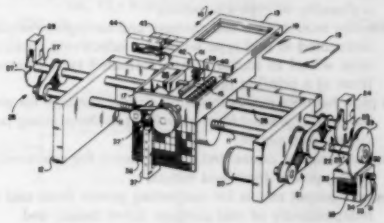
Helmut A. M. Schöttle, Berlin, Fed. Rep. of Germany, assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 19, 1979, Ser. No. 22,012

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1978, 2812380

Int. Cl.³ B41J *1/06*

U.S. Cl. 400—131 **6 Claims**



1. Conveying apparatus for an embossing machine operative to emboss plates for address printing machines, identification means, and the like, comprising: a housing, a first lead screw rotatably mounted in said housing, a plate carriage mounted upon said first lead screw to be moved along a first path upon rotation of said first lead screw, a second lead screw rotatably mounted by said plate carriage, a plate holder mounted upon said second lead screw to be moved in a second path upon rotation of said second lead screw, first rotation means for rotating said first lead screw in a first series of increments, second rotation means for rotating said first lead screw in a second series of increments, third rotation means for rotating said second lead screw in a series of increments, braking means for braking said plate holder including a toothed rack connected to said plate holder and a pawl pivotally connected to said plate carriage and means for engaging and disengaging said pawl and said toothed rack, said pawl being provided with a control tab, and a light sensor supported by said plate car-

riage, said tab being receivable with said light sensor when said pawl is lifted out of said toothed rack.

4,461,588

SERIAL PRINTING MECHANISM

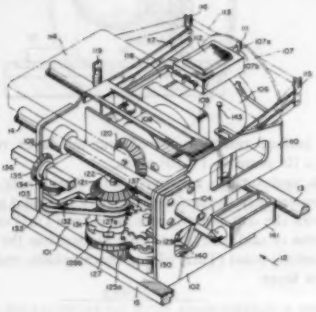
Shuichi Watanabe, Neyagawa; Noboru Katakabe, Uji, and Toshiharu Sasaki, Kawanishi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 16, 1982, Ser. No. 389,151

Claims priority, application Japan, Jun. 19, 1981, 56-95843; Nov. 19, 1981, 56-186265

Int. Cl.³ B41J *1/30, 25/30*

U.S. Cl. 400—144.2 **8 Claims**



1. A serial printing mechanism for typewriters or printers, comprising:

a platen for holding a paper;

a carriage reciprocally movable along a predetermined printing line on said platen;

carriage drive means connected to said carriage for reciprocally shifting said carriage along said predetermined printing line;

a type wheel rotatably mounted on said carriage and having a plurality of type characters;

a motor mounted on said carriage and having an output shaft connected to said type wheel for selectively rotating said type wheel to locate a predetermined type character in front of a printing position;

a print hammer means mounted on said carriage for pressing the type character located in front of the printing position against said platen;

a clutch means connected to said motor for selectively supplying power from said motor;

power output means for outputting power from said motor independently of said carriage drive means; and

distributing means connected between said clutch means and said carriage drive means and said power output means for taking out the power from said motor and selectively supplying it to said carriage drive means or said power output means;

said carriage drive means including means for blocking movement of said carriage drive means in one direction and holding said carriage against movement in the other direction when said clutch is disengaged.

4,461,589

MARKER APPARATUS WITH SHARPENER

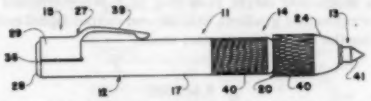
Clarence A. Emerson, 203 E. Birch, P.O. Box 1687, Bozeman, Mont. 59715

Filed Jul. 9, 1982, Ser. No. 396,801

Int. Cl.³ B43K *29/06*

U.S. Cl. 401—50 **10 Claims**

1. Marker apparatus including a body portion, a marking portion, a retainer portion and a sharpening portion; said body portion including an elongated tubular member, said tubular member including a substantially straight passage therethrough; said marking portion including a substantially straight marking stick formed of soft material, said marking stick having a substantially circular cross section; said retainer portion including means for exerting transverse pressure on said marking stick, said pressure exerting means being disposed adjacent one end of said tubular member; said sharpening portion including a removable clip member diposed on said tubular member adjacent an open end thereof remote from the end adjacent said retainer portion, said clip member including an arcuate section having substantially the same configuration as a portion of the cross section of said tubular member, said arcuate section being in contact with said tubular member over the entire concave surface of said arcuate section, flange sections extending inwardly from adjacent the ends of said arcuate



section, said flange sections being disposed in a longitudinal plane passing through the axis of said tubular member, said flange sections extending through and slidable along slots in the sidewall of said tubular member, said flange sections being selectively disposed completely within said tubular member and completely separable therefrom, said flange sections maintaining said arcuate section in contact with said tubular member, said flange sections and said arcuate section being a unitary structure, said flange sections including cutting sections diverging toward the free end of said tubular member; whereby an end of said marking stick can be sharpened by removing said stick from said tubular member, inserting one end of said marking stick into the end of said tubular member adjacent to said sharpening portion and rotating said stick with respect to said tubular member to cause the end of said stick to be sharpened as it contacts said diverging cutting sections.

4,461,590

INERTIA PEN

Antonio M. Alves dos Santos, and Helena Maria B. Alves dos Santos, both of Rua Fernao Alvares do Oriente, 4-20 Dto., Lisbon, Portugal (1700)

Division of Ser. No. 94,759, Nov. 16, 1979, Pat. No. 4,315,695. This application Oct. 26, 1981, Ser. No. 315,220

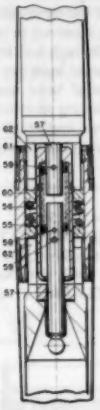
Claims priority, application Portugal, Nov. 20, 1978, 68804

Int. Cl.³ B43K *27/00, 24/00*

U.S. Cl. 401—115 **2 Claims**

1. An inertia pen comprising a hollow tubular shaped pen housing tapered at both ends and open at both ends, a marking element at each end having at least one marking tip slidably mounted within said housing to move substantially parallel to the longitudinal central axis of said housing, and an axially movable inertia mechanism within said housing comprising two bodies of calibrated mass movable coaxially with respect to said housing and axially slidable therein, each said marking element being attached at its inner end to one of said slidable bodies of calibrated mass and having a marker on the outer end extendable through the respective tapered end of said housing, each body of calibrated mass being adapted to move the respective marking element by impulse with respect to said housing selectively into a marking position where said marking tip is exposed through the respective end, or a non-marking position where said marking tip is withdrawn within said housing, a buffer spring between the inner ends of said slidable

bodies of calibrated mass to urge said bodies apart, and a bipolar recovering spring comprising a helical spring member



connected at its ends to the inner ends of said bodies of calibrated mass to resist movement of said bodies apart.

4,461,591

INK WRITING IMPLEMENT

Otto Mutschler, Rudolf-Krehl-Strasse, 21 Heidelberg, Fed. Rep. of Germany D-6900

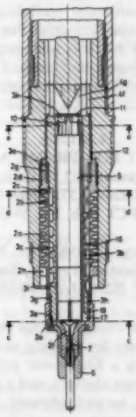
Filed Feb. 8, 1982, Ser. No. 346,621

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1981, 3110199

The portion of the term of this patent subsequent to Jun. 28, 2000, has been disclaimed.

Int. Cl.³ B43K *5/16, 1/06, 1/10*

U.S. Cl. 401—258 **3 Claims**



1. In an ink writing implement comprising:

(a) a tubular front portion having an outer end holding a writing point, the tubular front portion having a circumference and defining an axial bore, a planar shoulder in the outer tubular front portion, the tubular front portion comprising

(1) a spiral ink collecting system extending along the circumference of the outer tubular front portion,

(b) a retainer tube for a floating weight defining an axial bore coaxial with the axial bore of the tubular front portion and having an annular planar surface facing the planar shoulder and in contact therewith, the retainer tube comprising

(1) an elongated tubular portion having a circumference and extending through the tubular front portion bore, the tubular portion having an annular outer end engaging the shoulder, and

(2) another spiral ink collecting system extending along the circumference of the tubular portion, the front end of the retainer tube being cylindrically recessed and the recessed retainer tube front end comprising a surface defining an ink flow control path in the axial bore of the tubular front portion, and

(c) a floating weight guided for axial movement in the axial bore of the retainer tube, the floating weight defining an axially extending venting channel with the retainer tube, the improvement of

(d) annular planar surface being pierced by a venting groove and capillary grooves extending along the surface, and

(e) the planar shoulder of the tubular front portion forming an abutment for a front end of the floating weight,

(f) the axial bore in the retainer tube being of sufficient length to accommodate the axial movement of the floating weight, and

(g) the ink flow control path connecting the venting groove and channel with the spiral ink flow path.

4,461,592

DEVICE FOR PROVIDING A FRICTION JOINT

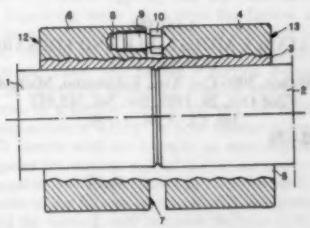
Kurt Adelbratt, Göteborg, Sweden, assignor to Aktiebolaget SKF, Gotebort, Sweden

Filed Sep. 18, 1981, Ser. No. 303,427

Claims priority, application Sweden, Oct. 9, 1980, 80070618

Int. Cl.³ F16B *2/02;* **F16D** *1/00*

U.S. Cl. 403—8 **2 Claims**

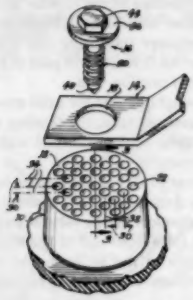


1. A friction joint assembly comprising an elongated inner sleeve member having at least one first tapered surface, a pair of outer sleeve members mounted on said inner sleeve member having confronting inner axial end faces in closely spaced side by side relation and having bores with second tapered surfaces complementing said first tapered surfaces, one of said outer sleeves having an axially directed threaded bore in its inner axial end face, a one piece screw member engageable in said threaded bore and having a head portion engageable with the axial end face of said other outer sleeve, a recess in said axial end face of said other outer sleeve adapted to receive said screw head portion therein and configured to prevent relative rotation of said members, said screw member actuatable to effect relative axial displacement of said sleeve members to initiate a radial force thereby providing the friction joint.

4,461,593
SELF-ALIGNING MOUNTING ARRANGEMENT

William G. Rodseth, Elgin, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 19, 1982, Ser. No. 360,014
Int. Cl.³ F16B 5/02
U.S. Cl. 403—11 13 Claims

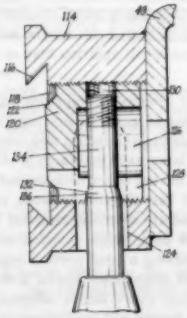


1. A self-aligning mounting arrangement for mounting a bracket to an upstanding boss, comprising: a threaded fastener having a major diameter and a minor diameter, a plurality of bores of substantially identical cross-sectional area in said boss the depth of said bores being sufficient to receive at least a portion of said threaded fastener, said bores being arranged in a matrix grid pattern having a predetermined grid dimension, the cross-sectional area of each bore being a predetermined fractional part of the average cross sectional area of the threaded fastener and said predetermined grid dimension being a predetermined proportion of the minor thread diameter of said threaded fastener, such that upon entry of said threaded fastener into a given one of said bores, sufficient relief is provided by bores adjacent to said given bore for receiving material displaced by said fastener, while maintaining the fastener within said given bore.

4,461,594
ROTATABLY ADJUSTABLE AND LOCKABLE CONNECTOR

Morris L. Waber, 3006 Coy Ave., Kalamazoo, Mich. 49001

Filed Oct. 28, 1981, Ser. No. 315,915
Int. Cl.³ F16C 11/00
U.S. Cl. 403—59 6 Claims



1. A releasable and lockable connection between machine elements comprising a first body part adapted to be secured to one element, and another body part adapted to be connected to the other element, said parts having co-acting interengagable dove-tail portions,

said first body part defining an internally threaded axial bore opening to the face of the dove-tail portion thereof,

a threaded locking plug received in said axial bore,

a slot formed part way through said body part and intersecting said bore to expose at least one third of said plug,

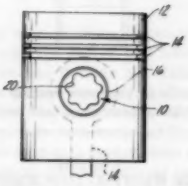
said plug defining a radial bore interrupting part of the threads thereon and having internal threads therein,

and a lock pin having one end received in said radial bore and projecting from said plug through said slot in said first body part.

4,461,595
WRIST PIN FOR RECIPROCATING ENGINES

Angelos Mallas, 17124 Clinton River, Mt. Clemens, Mich. 48044

Filed Sep. 29, 1982, Ser. No. 427,050
Int. Cl.³ F16J 1/16
U.S. Cl. 403—154 5 Claims



1. In an assembly for use in a reciprocating engine, the improvement comprising:

a piston;

a connecting rod having an upper portion with an opening extending therethrough; and

a wrist pin passing through the opening in the connecting rod and coupled to the piston, said wrist pin being defined by a tube having an outer surface dimensioned to as to substantially correspond in size to the opening in the connecting rod, said tube including a single, generally concentric, inner aperture extending throughout the longitudinal length of the tube, said aperture having an irregularly shaped cross-section defined by alternately connected convex and concave portions.

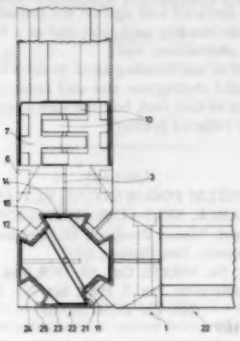
4,461,596
ARRANGEMENT FOR FRAME AND THE LIKE

Mats I. Davidson, Djupakal, 502 78 Gånghester, Sweden

PCT No. PCT/SE81/00269, 371 Date May 7, 1982, 102(e) Date May 7, 1982, PCT Pub. No. WO82/01054, PCT Pub. Date Apr. 1, 1982
PCT Filed Sep. 17, 1981, Ser. No. 380,675
Claims priority, application Sweden, Sep. 17, 1980, 8006509
Int. Cl.³ B25G 3/00; F16B 7/08
U.S. Cl. 403—231 8 Claims

1. An assembly comprising: at least two tubular structural elements, and a coupling for holding said elements together, said coupling including a first, inner portion arranged to be clamped in a cavity in one element, and a second, outer portion arranged to grip the second element by clamping firmly around said second element by means of outer contact surfaces on the coupling, the coupling comprising two sections, each section being provided with a head portion forming part of said outer portion and respectively located to one side of a center plane between the sections, the head portions supporting said contact surfaces; said coupling also compring tightening means for mutually displacing said sections so as to achieve said clamping and thereby move said contact surfaces towards each other perpendicular to said center plane, said cavity in the first structural member being provided with pairs of surfaces which are directed away from each other and located on either side of

the center plane, said first inner portion being provided with inner contact surfaces on opposite sides of the center plane to be brought in contact with the pairs of contact surfaces in said cavity which face away from each other, so that a displacement of the sections by said tightening means results in movement of said inner and outer contact surfaces to a contact with corresponding contact surfaces of the cavity of the one structural element and with the other structural element, respectively.

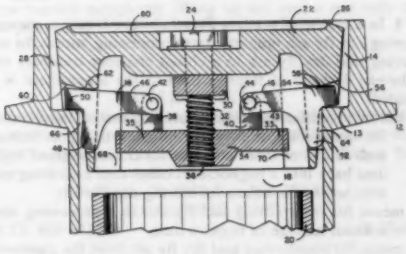


4,461,597

VALVE BOX COVER

Gerard F. Laurin, 110 Hemlock Ter., Augusta, Me. 04330

Filed Apr. 27, 1983, Ser. No. 489,020
Int. Cl.³ E02D *29/14*
U.S. Cl. 404—25 **15 Claims**



1. A cover of the type used in a valve box, manhole or the like of the type providing a cover seat comprising:

a rotatable bolt located within said cover;

a lever base threadedly engaged on said bolt under said cover and adapted to be raised or lowered upon alternate-direction rotation of said bolt;

at least one pivoting attachment means affixed to said lever base;

at least one slot defined within the side of said cover;

a lock lift lever pivotally attached to said pivoting attachment means on said lever base and extending through said slot;

a lift member portion formed as the upper part of said lock lift lever, the lift member portion being adapted to extend through said slot and to extend over the seat of said valve box; and

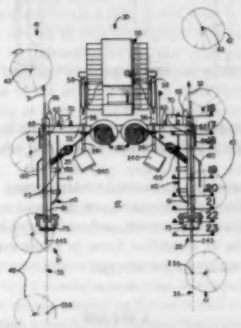
a lock member portion formed as the lower part of said lock lift lever, the lock member portion extending perpendicularly downward from said lift member portion and also being adapted to extend through said slot when said bolt is rotated and the lever base is lowered, thereby causing said lock member portion to be forced against an interior wall portion of said valve box to lock said cover in place, rotation of the bolt in the opposite direction acting to raise said lever base and to rotate said lock lift lever, thereby forcing said lift member portion downward against the seat of said valve box and said lock member portion away from the interior wall portion of said valve box to raise said cover from the seat upon which it rests and to unlock the cover.

4,461,598

MACHINE FOR INSTALLING DRIP IRRIGATION CONDUIT

Ronald D. Flechs, 1042 Samantha Dr., Paso Robles, Calif. 93446

Filed Feb. 8, 1982, Ser. No. 346,739
Int. Cl.³ E02F *5/10*; F16L *1/00*
U.S. Cl. 405—181 **23 Claims**



1. A machine for installing irrigation conduit in the earth surface, the conduit including a flexible hose and a plurality of risers of a predetermined length spaced along the hose and extended transversely from the hose at one side thereof and the machine comprising a frame adapted for movement along the earth surface; means mounted on the frame for forming a furrow extending along the earth surface having a substantially vertical side wall, and an opposite side wall, said furrow forming means depositing earth taken from the furrow along the side of the furrow opposite to the vertical side wall; means for feeding the conduit into the furrow; hose engaging means mounted on the frame and having a portion disposed rearwardly of the furrowing means at a position which is adjacent to the bottom of a furrow formed thereby for engaging the hose in a disposition in which the hose extends along the bottom of such furrow with the risers in an erect disposition and engaged against the vertical wall of the furrow and back-filling means engagable with earth taken from the furrow for returning such earth to the furrow rearwardly of said portion of the path toward the vertical wall to cover the hose in the furrow and to retain the risers in said erect disposition against the vertical wall.

4,461,599

APPARATUS FOR STORING HEAVY HYDROCARBON OIL AND VESSEL THEREFOR

Hiroshige Tanaka, Tokyo, Japan, assignor to Nihon Sekiyu Hanbai Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 33,956, Apr. 27, 1979, abandoned, which is a division of Ser. No. 886,906, Mar. 15, 1978, abandoned. This application Jan. 15, 1982, Ser. No. 339,623
Claims priority, application Japan, Mar. 31, 1977, 52-36590; May 12, 1977, 52-54786; Jan. 27, 1978, 53-8023; Jan. 27, 1978, 53-8024
Int. Cl.³ E02D *27/38*
U.S. Cl. 405—210 **3 Claims**

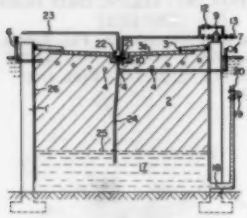
1. A storage vessel including a side wall which defines a

storing space for storing heavy hydrocarbon oil in a solidified state,

a roof for substantially covering the entire top area of the storing space, said roof being on top of the heavy hydrocarbon oil contained in the storing space,

a top heater positioned in said vessel below and spaced from the roof to define an unloading space between the undersurface of the roof and the top heater,

said top heater covering substantially the entire area of the upper portion of said space,



unloading means comprising a nozzle which projects to said storage space which contains the oil when re-fluidized, and

wherein means are connected to said vessel to provide and control flow of external water into and out of the lower end portion of said vessel, and said heavy hydrocarbon oil is stored in its solidified form in said vessel which oil is afloat on water in the storage vessel.

4,461,600

METHOD OF AND DEVICE FOR SOLIDIFYING ROCK IN MINE TUNNELS AND THE LIKE

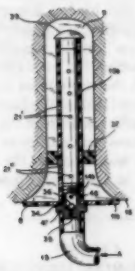
Hans Norkus, Herdecke, and Gerd Drespa, Dortmund-Kruckel, both of Fed. Rep. of Germany, assignors to Willich GmbH & Co., Dortmund, Fed. Rep. of Germany

Filed Mar. 23, 1982, Ser. No. 360,913

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1981, 3111462

Int. Cl.[3] **E21D** *20/02*

U.S. Cl. 405—260 **13 Claims**



1. A method of solidifying a rock formation in a mine, comprising the steps of:

drilling a bore with an accessible entrance end and a closed remote end into said rock formation;

partly inserting an open-ended tubular rock bolt with peripheral clearance into said bore while leaving a space between an outlet end of said rock bolt and the remote end of said bore;

connecting an accessible inlet end of said rock bolt to a source of hardenable bonding agent under high pressure for injecting same into the bore by way of said outlet end and said space;

providing an obstruction in an intermediate zone of said clearance for at least throttling a return flow of said bonding agent through said bore to the entrance end thereof;

sealing said entrance end against the outside by a closure member surrounding said inlet end at a location spaced from said obstruction; and

allowing part of said bonding agent to enter the sealed space between said obstruction and said closure member from the interior of said rock bolt through a restricted passage and under reduced pressure.

4,461,601

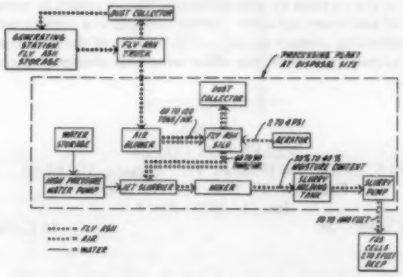
SLURRY SYSTEM FOR WASTING FLY ASH HAVING NONLEACHABLE, SELF-SUSTAINING END PRODUCT

Joseph H. Pound, Mount Prospect, Ill., assignor to American Fly Ash Company, Des Plaines, Ill.

Division of Ser. No. 949,659, Oct. 10, 1978, Pat. No. 4,313,762. This application Jan. 7, 1982, Ser. No. 337,804

Int. Cl.[3] **B65G** *53/00*

U.S. Cl. 406—109 **3 Claims**



1. In a system of wasting fly ash, in combination, means for storing dry fly ash preparatory to processing, means for transferring said dry fly ash to a closed chamber transport vessel whereby leakage of fugitive dust to the atmosphere is precluded,

the said transferring means including one or more conduits for introducing the fly ash into the transport vessel, as well as one or more conduits for transmission of fugitive dust back into a baghouse or other dust collecting means attached to the means for storing dry fly ash,

means for transporting said fly ash to a processing station without leakage of fugitive dust,

means for transferring said dry fly ash from the transporting means to a closed chamber storage vessel without leakage of fugitive dust,

means for transferring said dry fly ash to a slurrier without leakage of fugitive dust,

said last transferring means comprising a single outlet from the closed chamber storage vessel, an aerator attached near the outlet of said closed chamber storage vessel, and flexible means connecting the outlet to the slurrier,

means for mixing fly ash with sufficient water and/or supplemental additives to produce a fly ash-water, or fly ash-water-supplemental additive slurry having a set up time of no less than 3–4 hours, and the capability of being pumped for up to several thousand feet,

said mixing means incorporating means to regulate the relative amounts of fly ash and water introduced into the mixture,

separate means for pressurizing said slurry whereby it may be transported for up to several thousand feet under pressure to a disposal site exposed to ambient conditions, and

forming a confined enclosure at the disposal site sufficient to retain said slurry in an undisturbed state until the slurry is self-sustaining.

4,461,602

MILLING CUTTER

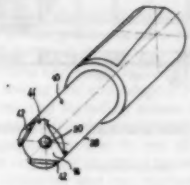
Otto Zettl, Fellenbergstrasse 9, Reicholzried, Fed. Rep. of Germany

Filed Nov. 5, 1982, Ser. No. 439,465

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1982, 3200191

Int. Cl.³ B26D 1/12

U.S. Cl. 407—40 5 Claims



1. A milling cutter comprising a shaft and a cutter plate, the cutter plate provided with a central bore and with a plurality of peripherally spaced teeth concentrically arranged with respect to the bore, a screw or a screw bolt extending through said central bore in said cutter plate and into a tap hole coaxially arranged in the front end of the shaft for detachably fastening the cutter plate at the front face of the shaft; the shaft provided with a recess at the front side thereof, the periphery of the recess defined by three planar inside surfaces coinciding with the sides of an equilateral triangle symmetrically arranged with respect to the central bore, a gap provided between each pair of adjacent planar inside surfaces on the shaft front end diameter, the cutter plate provided with three planar outside surfaces, coinciding with the sides of said equilateral triangle, one tooth formed between extensions of each pair of planar outside surfaces of the cutter plate, the cutter plate fitted in the recess such that each one of said three outside surfaces of the cutter plate contacts one of said three inside surfaces of the recess thereby completely filling up the recess and only the teeth protruding outwards through said gaps.

4,461,603

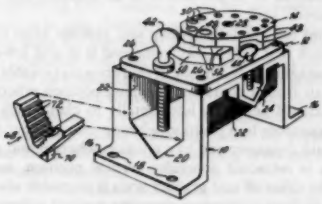
DRILLING FIXTURE

George Klee, Cincinnati; George R. De Noma, Madeira; Stephen L. Collier, and Rodney J. Newman, both of Cincinnati, all of Ohio, assignors to Cincinnati Tool, Division of Warren Tool Corporation, Cincinnati, Ohio

Filed Mar. 19, 1982, Ser. No. 359,821

Int. Cl.³ B23B 47/28

U.S. Cl. 408—115 R 5 Claims



1. A drilling fixture for drilling holes in a workpiece comprising, in combination,

a base having a pair of generally L-shaped end legs, a pair of generally vertical side walls joining said end legs, a V-shaped groove passing through said base and extending between said end legs for receiving therein a workpiece to be drilled, and a pair of axially aligned V-shaped openings in said vertical side walls of a size smaller than said V-shaped groove for receiving therethrough a smaller size workpiece to be drilled, the longitudinal axes of said groove and said openings intersecting one another substantially at right angles, said base being mountable to a surface by means of said end legs,

a cover attached to the top of said base and enclosing said groove and said openings,

an indexable drill bushing mounted on the top of said cover and being rotatable about its center axis, said bushing having a series of different size drill guide holes spaced radially outwardly from said center axis on a common radius and separated circumferentially from one another, said drill guide holes being sized to receive predetermined drill bit diameters so as to allow rotation of the associated drill bits while guiding said drill bits along their longitudinal axes during a drilling operation, the circumference of said bushing having a plurality of planar faces intersecting at edges,

indexing and locking means on said cover for indexing said drill bushing such that a drill guide hole is located over a spot to be drilled in said workpiece and for locking said bushing in its indexed position, one drill guide hole being situated when said bushing is indexed such that the longitudinal axis of the drill bit passing therethrough intersects substantially at right angle the point of intersection of the longitudinal axes of said V-shaped groove and said V-shaped openings to permit drilling on the centerline of the workpiece, said indexing and locking means including teeth that engage said edges of said drill bushing to precisely locate said drill bushing and positively lock it in indexed position to prevent its rotation during the drilling operation,

first screw means extending through said cover for releasably securing a workpiece in said V-shaped groove, and

second screw means extending through said cover for releasably securing a workpiece passing through at least one of said V-shaped openings, said first and second screw means being operable to lock a workpiece in position to be drilled independently of said drill bushing.

4,461,604

MOBILE MACHINE FOR REMOVING SURFACE IRREGULARITIES FROM RAIL HEADS

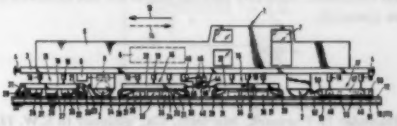
Josef Theurer, and Klaus Riessberger, both of Vienna, Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Division of Ser. No. 7,424, Jan. 29, 1979, Pat. No. 4,309,846. This application May 8, 1981, Ser. No. 261,949

Claims priority, application Austria, Feb. 10, 1978, 978/78

Int. Cl.³ B23D 1/20; E01B 31/15

U.S. Cl. 409—296 3 Claims



1. A mobile machine mounted on a track for advancement therealong, the track comprising two rails each including a head having a running face, a lateral inside face and a lateral outside face, for removing surface irregularities from the faces of the rail heads, which comprises

(a) a machine frame,

(b) a pair of vertically adjustable tool carriers transversely aligned with respect to the track, a respective one of the tool carriers being associated with a respective one of the rails,

(1) each tool carrier carrying a metal shearing tool engag-

ing with the lateral outside face of the rail head of the respective rail, and

(2) guide rollers respectively engaging the running faces and lateral outside faces of the rail heads for guiding each tool carrier along the respective rail,

(c) a longitudinally adjustable spacing member extending transversely to the track between the tool carriers and a pivot connecting respective ends of the spacing member to a respective one of the tool carriers, and

(d) power-actuated means for pressing the guide rollers against the rail head faces they engage for guiding each tool carrier clearance-free along the rails, the power-actuated means including a drive for adjusting the length of the spacing member.

4,461,605

PROCESS FOR MANUFACTURING LIDS WITH A CLOSURE STRIP COVERING AT LEAST ONE POURING HOLE, IN PARTICULAR SUCH LIDS FOR BEVERAGE CANS

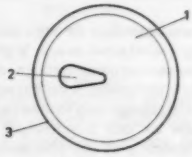
Oldrich Stanek, and Siegfried Bloeck, both of Kreuzlingen, Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Apr. 30, 1982, Ser. No. 373,399

Claims priority, application Switzerland, May 7, 1981, 2962/81

Int. Cl.³ B21B *51/00*

U.S. Cl. 413—8 **12 Claims**



1. Process for manufacturing a can lid with sealed on closure strip covering at least one pouring hole having cut edges therein which comprises providing said closure strip with polyamide heat sealable surface sealed thereon, sealing said closure strip to the can lid, treating the inner face of the strip and the surrounding region on the inner face of the lid material with an adhesive primer consisting of a solution of a polyacrylic ester, drying said primer, coating the treated region on the inner face of the lid including said cut edges with a plastisol layer , and allowing said plastisol layer to gel with the aid of a heat treatment, whereby said cut edges are not attacked by the can contents.

4,461,606

SUPPORTING GRIP FOR BIN OR HOPPER

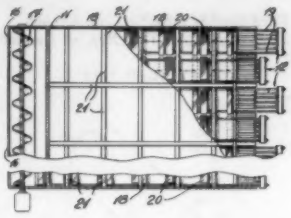
Alexander D. Cormack, Marietta, Ga., assignor to S.W. Hooper & Co. Ltd., Montreal, Canada

Continuation of Ser. No. 269,615, Jun. 2, 1981, abandoned. This application Jul. 21, 1983, Ser. No. 515,887

Int. Cl.³ B65G *65/44, 65/46*

U.S. Cl. 414—325 **7 Claims**

1. In a bin or hopper for storing solid materials to a depth of at least 20 feet, the bin or hopper having a continuous discharger means at the bottom of the solid materials, the improvement comprising a fixed load supporting grid structure in the bin or hopper, positioned above the discharger means to support the weight of only a large portion of solid materials in the bin or hopper above the discharger, the uppermost portions of said grid being a continuous spaced series of perpendicular beams with flat surfaces which are disposed in a single plane with the spaces between said grid sufficient to allow continuous passage of the solid materials to the continuous discharger means.



4,461,607

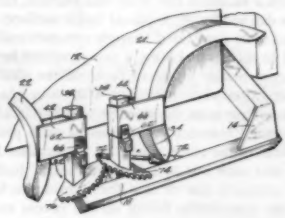
REFUSE CONTAINER GRIPPING APPARATUS

Fred T. Smith, Palos Verdes Peninsula, Calif., assignor to The Heil Co., Milwaukee, Wis.

Filed Sep. 22, 1982, Ser. No. 421,572

Int. Cl.³ B65F *3/02*

U.S. Cl. 414—406 **12 Claims**



1. Apparatus adapted to be supported on a refuse truck and for gripping a container and for causing the container to be dumped into the refuse truck, said apparatus comprising:

a frame adapted to be pivotally joined to the vehicle for pivotal movement about a horizontal axis, said frame including an end adapted to move from a lower container engaging position to a raised container dumping position,

a pair of grabber arms for surrounding at least a portion of said container and for gripping said container, one of said grabber arms being adapted to be positioned on one side of said container and the other of said grabber arms being adapted to be positioned on an opposite side of said container, and

means for pivotally joining said grabber arms to said frame such that, when said frame end is in said lower container engaging position, one of said arms is pivotable about a first axis from a container clamping position wherein said arm extends generally horizontally to clampingly engage the container to a position wherein said grabber arm releases said container and to a position wherein said grabber arm is in retracted generally vertical position, and such that the other of said grabber arms is pivotable about a second axis from a container clamping position wherein said other of said grabber arms extends horizontally to a position wherein said other of said grabber arms releases said container and to a position wherein said other of said grabber arms is in a retracted generally vertical position, said grabber arms being movable about said axes between said container gripping position and said generally vertical position in a continuous uninterrupted motion.

12. Apparatus adapted to be supported on a refuse truck and for gripping a refuse container and for causing the refuse con-

tainer to be dumped into the refuse truck, said apparatus comprising:

a frame adapted to be pivotally joined to the vehicle for pivotal movement about a horizontal axis, said frame including a free end adapted to move from a container gripping position to a raised container dumping position,

a pair of grabber arms supported by said frame free end and supported by said free end for movement toward and away from each other to clampingly engage a container, and

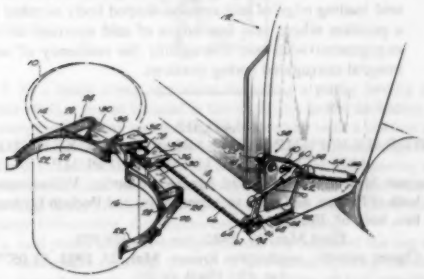
means for preventing the container from sliding movement with respect to the grabber arms when said container is raised to said container dumping position, said means for preventing sliding movement including a container engaging member having one end adapted to engage said container, said one end including means for frictionally engaging the container, and means for pivotally joining said container engaging member to one of said grabber arms such that said container engaging member one end moves toward said container and into tighter engagement with said container as said container moves with respect to said grabber arms.

4,461,608

REAR LOADER CONTAINER TIPPER

Robert H. Boda, Ooletewah, Tenn., assignor to The Heil Co., Milwaukee, Wis.

Filed Jun. 14, 1982, Ser. No. 388,422
Int. Cl.³ B66F *3/04*
U.S. Cl. 414—408 **13 Claims**



13. Apparatus adapted to be supported on a rear loading refuse truck and for gripping a container and for dumping said container into the refuse truck, the apparatus comprising a pair of clamping arms moveable between a first position spaced from opposite sides of the container and a clamping position wherein said clamping arms clampingly engage the container, means for supporting said clamping arms for movement from said first position to said clamping position and for supporting said clamping arms for movement from a container engaging position to a container dumping position, and means for causing movement of said clamping arms from said first position to said clamping position and for subsequently causing movement of said clamping arms to a container dumping position, said means for causing movement including means for preventing release of said container when said clamping arms are moved from said container engaging position.

4,461,609

SELF-PROPELLED WHEELCHAIR VEHICLE

Clarence H. Zinno, 2912 Hidalgo Dr., Orlando, Fla. 32806

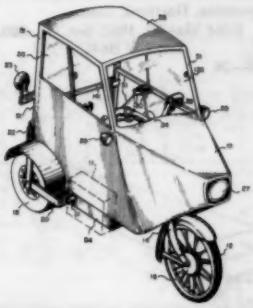
Filed May 24, 1982, Ser. No. 381,035
Int. Cl.³ B62D *61/08*
U.S. Cl. 414—495 **6 Claims**

1. In a self-powered wheeled vehicle having a chassis frame and protective body, the improvement comprising the combination of:

a flat ramp disposed parallel to the ground in a first position to permit a wheelchair to be moved by its occupant onto said ramp;

coupling means between said ramp and said chassis frame;

power means attached to said chassis frame and coupled to said ramp for raising said ramp from said first position to a second position parallel with said first position to provide clearance between said flat ramp and said ground, said power means controllable by the occupant of said wheelchair; and



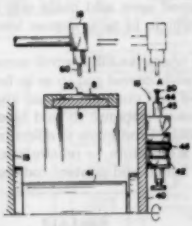
vehicle operating controls disposed adjacent to a wheelcahir on said ramp when said ramp is in said second position for permitting an occupant of said wheelchair to drive said vehicle.

4,461,610

APPARATUS FOR MOUNTING CHIP TYPE CIRCUIT ELEMENTS ON PRINTED CIRCUIT BOARDS

Kotaro Harigane; Kenichi Takahashi; Hirokazu Shudo, and Shuichi Tando, all of Tokyo, Japan, assignors to TDK Corporation, Japan

Continuation of Ser. No. 266,109, May 21, 1981, Pat. No. 4,372,802. This application Jul. 8, 1982, Ser. No. 396,491
Claims priority, application Japan, Jun. 2, 1980, 55-72753; Jun. 9, 1980, 55-79296[U]; Nov. 17, 1980, 55-164509[U]; Nov. 17, 1980, 55-164510[U]; Nov. 19, 1980, 55-164813[U]
Int. Cl.³ B65H *3/08*
U.S. Cl. 414—752 **10 Claims**



1. A suction head for chip type circuit elements comprising a supporting block;

a pneumatic cylinder affixed to said supporting block, said pneumatic cylinder including an outer cylinder, a piston slidably received within said outer cylinder for movement between an upper and a lower position, and a suction pin operatively connected to said piston;

means for supplying compressed air to said pneumatic cylinder to lower said piston and suction pin as a unit,

a suction port opening in the lower end surface of said suction pin; and

a suction bore formed in said outer cylinder for connection

to a vacuum source, said suction bore being located so as to communicate with said suction port when the latter is in said lower position.

4,461,611

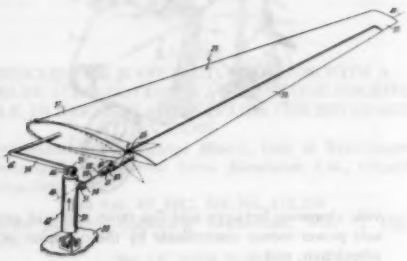
HELICOPTER ROTOR WITH BLADE TRAILING EDGE TABS RESPONSIVE TO CONTROL SYSTEM LOADING

Philip L. Michel, Newtown, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed May 20, 1982, Ser. No. 380,454

Int. Cl.³ B64C *27/44*

U.S. Cl. 416—24 **4 Claims**



1. A helicopter having a rotor mounted for rotation about an axis of rotation and which rotor includes a hub and at least two rotor blades of airfoil cross-sectional shape extending substantially radially therefrom and supported for pitch change motion by the rotor hub,

each of said blades having a trailing edge tab extending in a blade spanwise direction and supported therefrom for pivotal motion about an axis extending in a spanwise direction so as to vary the blade cross-sectional shape when pivoted and said tab being shaped to form the blade trailing edge for at least a portion of the blade span,

blade pitch control means comprising a blade pitch horn connected to said blade so that motion of said pitch horn causes blade pitch variation, and a control rod connected to said pitch horn so that pilot actuation of said control rod will actuate said pitch horn and thereby vary blade pitch, and further so that during rotor operation with said control rod fixed in position, aerodynamic and inertial loads imposed upon said blade will cause blade pitching moments which, in turn, impose loads upon said control rod, and

continuously operative tab control means operatively associated with said control rod so as to be overridden by pilot actuation of said control rod and also so as to cause said tab to pivot in response to said blade pitching moments imposed control rod loads to effect trailing edge tab pivot motion in a direction to relieve said blade pitching moments and hence said control rod loads.

4,461,612

AEROFOIL FOR A GAS TURBINE ENGINE

Alec G. Dodd, Derby, England, assignor to Rolls-Royce Limited, London, England

Filed Apr. 19, 1983, Ser. No. 486,521

Claims priority, application United Kingdom, Apr. 27, 1982, 8212168

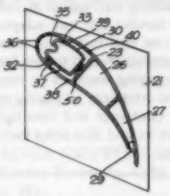
Int. Cl.³ F01D *5/18*

U.S. Cl. 416—96 A **3 Claims**

1. A cooled vane or blade assembly for a gas turbine engine comprising:

an aerofoil-shaped member having a leading edge and a trailing edge, said aerofoil-shaped member having a hollow interior defined by convex suction and concave pressure flanks, a pair of interior opposed ribs extending from said flanks adjacent said leading edge, a partition extending spanwise between said flanks, said partition dividing said hollow interior into a forward portion and a rearward portion;

a unitary air guide tube positioned within and spaced from walls of said forward portion of said hollow interior of said aerofoil member and having a sectional shape generally corresponding to a sectional shape of said forward portion, said air guide tube having at least one elongated aperture opening towards said leading edge of said aerofoil-shaped member, said aperture being defined by



spaced spanwise extending free edges and spaced chordwise extending integral corrugated spring portions, said integral corrugated spring portions having a resiliency tending to separate and urge said free edges into engagement with said ribs;

and resilient means positioned between said partition and said air guide tube for urging said air guide tube towards said leading edge of said aerofoil-shaped body member to a position where said free edges of said aperture are in engagement with said ribs against the resiliency of said integral corrugated spring portions.

4,461,613

HYDRAULIC PUMP WITH VARIABLE-STROKE PISTON AND GENERATOR USING SAID PUMP

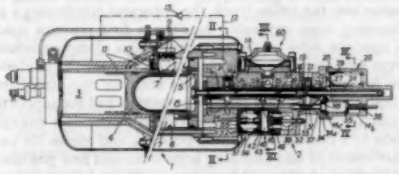
August Moiroux, Ecully, and Maurice Bouvier, Villeurbanne, both of France, assignors to Airmachines and Poclain Hydraulics, both of, France

Filed Mar. 19, 1982, Ser. No. 359,995

Claims priority, application France, Mar. 23, 1981, 81 05770

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—285 **13 Claims**



1. A double-acting hydraulic pump capable of varying the amount of fluid supplied thereby through a continuum between a maximum and minimum flow, the pump comprising:

a piston moving with a reciprocal rectilinear movement inside a cylinder each chamber of which is provided with a suction valve and a delivery valve,

a piston rod adapted to be driven by a variable-displacement driving member,

a rod extension reciprocally movable with said piston for varying the pressure within a space of variable volume,

a by-pass device for providing fluid communication between said chambers of said cylinder, wherein said by-pass device is operable in response to the pressure in said space for establishing communication between said chambers

during a predetermined portion of said reciprocal movement of said piston, and

control means cooperating with said by-pass device for selectively varying the length of said predetermined portion to any value between a maximum and a minimum length.

4,461,614

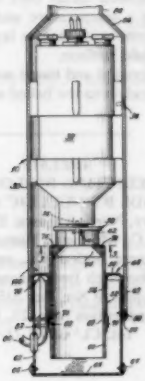
THROUGH FLOW SUMP PUMP

Karl O. Niedermeyer, 17W068 North St., Bensenville, Ill. 60106

Filed Apr. 15, 1982, Ser. No. 368,860

Int. Cl.³ F04B *35/04, 39/00*

U.S. Cl. 417—424 **13 Claims**



1. In a sump pump apparatus including a pump having an outer shell, a motor located in the shell, the motor including a waterproof housing and having a motor shaft with a portion of the shaft extending externally of said housing, a pump impeller affixed to the external shaft portion, a pump intake opening in an intake conduit which extends through the shell, the intake opening being proximate the pump impeller, and a pump discharge connection, the improvement comprising

a. said pump impeller being immediately adjacent the top of said intake opening, the top of said intake opening including a lubricating surface for the interface of said impeller and the top of said intake opening,

b. a debris trap within said shell comprising an annular chamber surrounding said intake conduit and extending beneath said intake opening, and

c. said shell having a bottom with an aperture shaped for through passage of said intake conduit, and including an annular collar about said aperture surrounding said intake conduit, and further including means for releasably securing said collar to said intake conduit for adjusting the position of said intake conduit relative to said impeller.

4,461,615

COMBUSTION CONTROL DEVICE

Masaharu Inoue, Numazu, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 19, 1982, Ser. No. 399,870

Claims priority, application Japan, Jul. 24, 1981, 56-109361[U]

Int. Cl.³ F23N *5/00*

U.S. Cl. 431—76 **4 Claims**

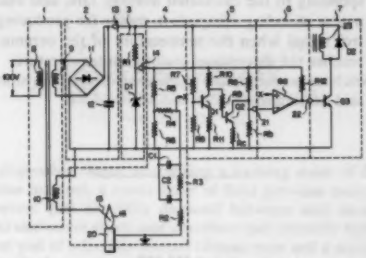
1. A combustion control device for controlling combustion of a flame based on the indiret measurement of oxygen content by measuring a flame current through an electrode rod placed into said flame, comprising:

a power source;

reference voltage generating means, connected to said power source, for producing a reference voltage that is a function of supply voltage of said power source;

flame current circuit means for conducting a flame current through said flame and electrode rod;

flame current detecting means, connected to said power source and flame current circuit means for detecting flame current as a function of ambient oxygen content and the supply voltage, said flame current detecting means producing a detection voltage corresponding to the flame current;



means for comparing said detection voltage and reference voltage and generating a comparison signal indicative thereof; and

means responsive to said comparison signal for controlling a fuel supply valve for controlling a supply of fuel to said flame thereby performing combustion control.

4,461,616

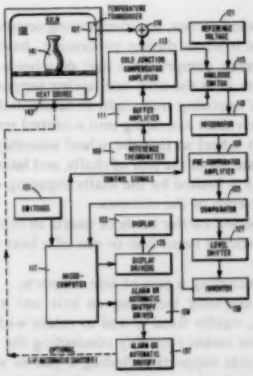
CERAMIC HEAT TREATMENT REGULATING APPARATUS AND METHOD

Milan Vukovich, Jr., Delaware County, Ohio, assignor to The Edward Orton Jr., Ceramic Foundation, Westerville, Ohio

Filed Feb. 25, 1983, Ser. No. 469,829

Int. Cl.³ F26D *7/00*; **F27B** *1/26, 9/40*; **F23N** *1/00*

U.S. Cl. 432—18 **17 Claims**



15. In a periodic kiln having an enclosure to contain a ceramic article, heating means for raising the temperature of the interior of the enclosure to the extent necessary to provide sufficient heat treatment to mature the article, and temperature transducer means for producing a temperature signal representative of the temperature of the interior of the enclosure, a ceramic heat treatment regulating apparatus for shutting off said heating means when the article has been matured by sufficient heat treatment, said apparatus comprising:

conversion means for converting the temperature signal to a temperature value;

memory means for storing a predetermined relationship between maturation temperatures and rates of temperature increase for the ceramic article being heated;

calculating means connected to said memory means and said conversion means for calculating an average rate of temperature increase and for determining from the stored relationship the value of maturation temperature corresponding to the calculated average rate, said calculating means including comparison means for producing a control signal when the temperature of the ceramic article reaches the determined maturation temperature;

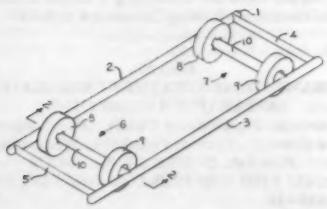
switch means responsive to the control signal for shutting off said heating means.

4,461,617

CARRIER FOR SEMICONDUCTORS

Donghwa Liu, Rancho Palos Verdes, Calif., assignor to ASQ Boats, Inc., Tustin, Calif.

Filed Oct. 25, 1982, Ser. No. 436,299
Int. Cl.³ F27B *9/00;* **B61B** *13/00*
U.S. Cl. 432—253 **14 Claims**



1. A wheeled carrier, for transporting semiconductor wafers or other such items during processing, having at least one wheel assembly comprising a pair of wheels mounted on an axle to rotate with the axle, and having support means including a pair of opposing stub shafts in substantial alignment with the axle, each shaft extending into a central recess in the outer face of each wheel so that the wheel assembly is mounted on and can rotate about the pair of shafts, and lateral movement of the assembly is limited by the shafts engaging one or the other of the inner ends of the recesses.

13. A wheeled carrier made of quartz or other such material for use in moving items into or out of a heat treating furnace comprising:

a frame including a pair of side supports;

a wheel assembly including an axle and a pair of spaced wheels, rigidly fixed to and to rotate with the axle; and

connection means rotatably connecting the wheel assembly to the side supports including a pair of stub shafts, each respectively mounted on one of said pairs at opposite ends of said axle in substantial alignment with the axle and with the end of each shaft being rotatably received in a surrounding recess, formed in the other of said pairs, the mating shaft and recesses being formed with substantial tolerance therebetween so as to minimize the engaging friction contact area between a shaft and its recess, while the shafts and the inner ends of the recesses limit lateral movement of the wheel assembly preventing the wheels from engaging the side supports.

4,461,618

PROCESS FOR PRODUCING A DENTAL RESTORATION

Robert D. DeLuca, Pennington, and Robin M. F. Jones, Titusville, both of N.J., assignors to Johnson & Johnson Dental Products Company, East Windsor, N.J.

Continuation-in-part of Ser. No. 342,258, Jan. 25, 1982, abandoned. This application Nov. 10, 1982, Ser. No. 440,231
Int. Cl.³ A61K *6/08*
U.S. Cl. 433—200 **6 Claims**

1. Process for producing a dental restoration which comprises:

(a) applying to a surface of a cleaned nickel-containing metal core a coating of a composition that consists of powdered aluminum and an inert volatile organic liquid carrier;

(b) baking the coated metal core in a substantially inert atmosphere to a temperature and for a period of time sufficient to form a continuous layer consisting of nickel aluminide on said surface;

(c) cleaning the coated and based surface; and

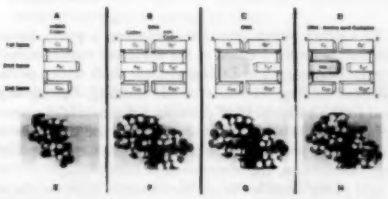
(d) applying porcelain to the baked and cleaned surface and firing.

4,461,619

METHOD OF PREDICTING BIOLOGICAL ACTIVITY OF COMPOUNDS BY NUCLEIC ACID MODELS

Lawrence B. Hendry, North Augusta; Edwin D. Bransome, Jr., Aiken, both of S.C.; Marion S. Hutson, Augusta, and Lillian K. Campbell, Atlanta, both of Ga., assignors to Medical College of Georgia Research Inst., Augusta, Ga.

Continuation-in-part of Ser. No. 335,589, Dec. 29, 1981, abandoned. This application Mar. 21, 1983, Ser. No. 477,017
Int. Cl.³ G09B *23/26*
U.S. Cl. 434—295 **8 Claims**



1. A method for determining the biological activity of a molecule, comprising the steps of:

(a) preparing a model of a complementary double-stranded codon-anticodon nucleic acid complex;

(b) removing the second base of the triplet sections of said codon to form in each section a space bordered by the remaining bases;

(c) connecting the closest points on the upper and lower surfaces of the bases bordering the space to form a cavity; and

(d) comparing the stereochemical properties of said molecule with each of the cavities to determine a complementary fit, with a fit indicating said biological activity.

4,461,620

PROPULSION DEVICE AND A METHOD OF PROPELLING A NAUTICAL VESSEL

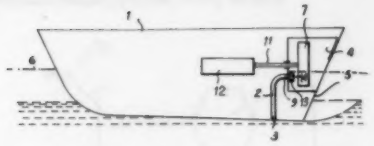
Roland Brachet, Domaine d'Arnaga, Callian, France 83810

Continuation of Ser. No. 945,500, Sep. 25, 1978, abandoned. This application Oct. 29, 1980, Ser. No. 201,771
Claims priority, application France, Oct. 5, 1977, 77 30020
Int. Cl.³ B63H *11/02*
U.S. Cl. 440—38 **14 Claims**

1. A propulsion device for a nautical vessel positioned in water, for use during movement of the boat across the water, said device comprising:

(a) a water intake;

(b) a conduit for conveying water from said intake to an aperture at the rear of said boat, said water being forced through said aperture in the form of a water jet; and



(c) a propeller attached to a shaft for driving said propeller to subdivide said water jet into segments and to project each of said segments directly into the air, without being subjected to a pressure other than air pressure, as segments with an acceleration.

4,461,621

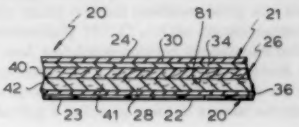
DISPOSABLE DIAPER WITH POLYMER COATING

Hamzeh Karami, Embourg, and André Crutzen, Liége, both of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

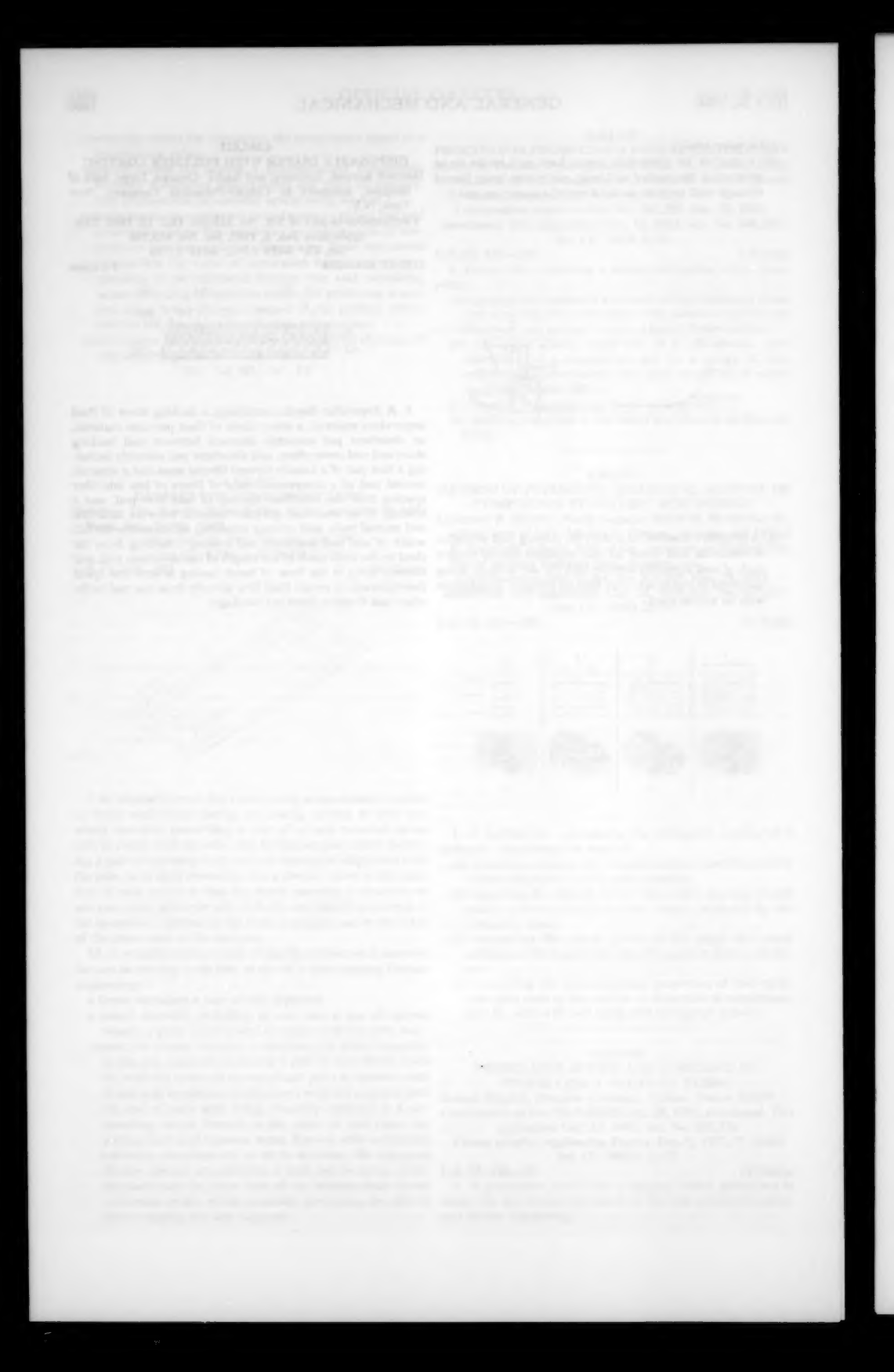
Continuation-in-part of Ser. No. 313,040, Oct. 19, 1981. This application Jan. 3, 1983, Ser. No. 455,188

Int. Cl.³ A41B *13/02*; A61F *13/16*

U.S. Cl. 604—368 **3 Claims**



1. A disposable diaper comprising a backing sheet of fluid impervious material, a cover sheet of fluid pervious material, an absorbent pad assembly disposed between said backing sheet and said cover sheet, said absorbent pad assembly including a first pad of a loosely formed fibrous mass and a separate second pad of a compressed mass of fibers of less interfiber spacing than the interfiber spacing of said first pad, and a coating of an absorbent polymer material between said first and second pads, said coating extending substantially the full width of said pad assembly, said coating extending from the third to the sixth tenth of the length of the absorbent pad, said coating being in the form of bands having at least one space therebetween to permit fluid flow directly from one pad to the other and freedom from gel blockage.



4,461,622

DYESTUFFS OF THE PHTHALOCYANINE SERIES, THEIR PREPARATION AND THEIR USE ON CELLULOSE

Konrad Mix, Frankfurt, and Erich Feess, Hofheim, both of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

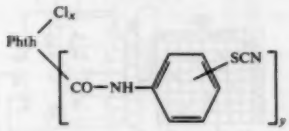
Filed Aug. 30, 1982, Ser. No. 412,604

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1981, 3135371

Int. Cl.³ C09B *47/26*; D06P *3/60*

U.S. Cl. 8—661 8 Claims

1. Phthalocyanine dyestuffs of the formula



wherein Phth is a cobalt phthalocyanine moiety;

x is a number from 0 to 3;

y is a number from 1 to 4 and the sum of x and y is 4 or less; the thiocyanate moiety is meta or para to the amino; and addition products thereof formed with water in the presence of acids.

4,461,623

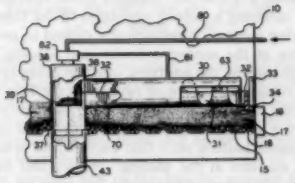
RECOVERY OF CARBON BLACK

John R. Casperson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 293,064, Aug. 17, 1981, Pat. No. 4,425,144. This application Sep. 21, 1982, Ser. No. 420,976

Int. Cl.³ C01B *31/14*

U.S. Cl. 23—314 7 Claims



1. A process for pelleting particles of carbon black which process comprises:

(a) providing a near horizontally oriented primary filtration medium in a filtration chamber,

(b) passing a carbon black containing gas through said primary filtration medium such as to deposit a layer of carbon black on top of said primary filtration medium,

(c) moving a pelleting means in proximity to and substantially parallel to said primary filtration medium, said pelleting means comprising a mixing device located within a housing having an inlet zone and an outlet, and thereby,

(d) directing a portion of the layer of carbon black toward the inlet zone of the pelleting means,

(e) rotating the mixing device within the moving housing of the pelleting means to form pellets of carbon black, and

(f) recovering the pellets of carbon black so formed from said outlet.

4,461,624

BENEFICIATION OF LOW-RANK COALS BY IMMERSION IN RESIDUUM

Brian Y. Wong, Mississauga, Canada, assignor to Gulf Canada Limited, Toronto, Canada

Filed Feb. 28, 1983, Ser. No. 470,106

Int. Cl.³ C10L *5/16*, *9/00*; F26B *3/00*

U.S. Cl. 44—6 20 Claims

1. A method of improving the calorific value of low-rank coal comprising immersing said coal in a distillation residuum of petroleum crude oil, said residuum being at a temperature between substantially 240° C. and the decomposition temperature of the coal, said decomposition temperature being defined as the temperature for a particular coal at which its rate of weight loss upon heating first reaches a maximum value, said residuum having a softening point of at least substantially 80° C.

4,461,625

METHODS OF CLEANING COAL

Clay D. Smith, and Douglas V. Keller, Jr., both of Lafayette, N.Y., assignors to Otisca Industries, Ltd., Syracuse, N.Y.

Division of Ser. No. 3,641, Jan. 15, 1979, which is a division of Ser. No. 561,168, Mar. 24, 1975, Pat. No. 4,173,530, which is a continuation-in-part of Ser. No. 423,577, Jan. 14, 1974, abandoned. This application Dec. 22, 1980, Ser. No. 218,637

Int. Cl.³ C10L *9/02*

U.S. Cl. 44—10 R 11 Claims

1. In a process wherein a sulfur containing coal is burned, the improvement which comprises:

(a) admixing pulverized coal with at least one inorganic material selected from the group consisting of (i) an oxide of calcium, (ii) a hydroxide of calcium; and (iii) calcined dolomite; and

(b) thereafter burning the admixture of said pulverized coal and said inorganic material in conventional combustion equipment at a combustion bed temperature at which said inorganic material is effective to furnish reduced emissions of sulfur oxide combustion products.

4,461,626

HAND PRESSING DEVICE FOR MAKING FUEL BRIQUETTES FROM SOAKED PAPER

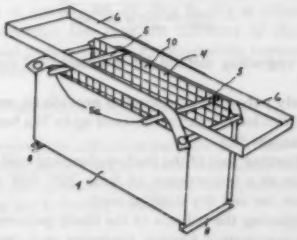
Erik Foldbjerg, Stendyssevej 84, DK-3540 Lynge, Denmark

Filed Jan. 20, 1982, Ser. No. 341,129

Claims priority, application Denmark, Feb. 23, 1981, 799/81

Int. Cl.³ B30B *11/00*; C10L *11/08*

U.S. Cl. 44—11 9 Claims



1. An apparatus for forming fuel briquettes from soaked paper, comprising:

a rectangular frame member having rigidly interconnected non-perforated side walls and end walls with smooth inner faces;

a perforated plate disposed within said frame member;

supporting means for supporting said perforated plate provided on said frame member;

a pressing plunger dimensioned to slide within said frame member, said plunger having a perforated bottom portion and an open top portion;

bearing means provided on said plunger;

a first manually operated lever and a second manually operated lever each pivotably mounted on said frame member and each adapted to pivot from a first position wherein said levers extend outwardly away from said frame member to a second position wherein said levers extend over said frame member and wherein pivotal movement of said levers from said first position to said second position effects contact between said levers and said bearing means so as to press said plunger into said frame member.

4,461,627

UPGRADING METHOD OF LOW-RANK COAL

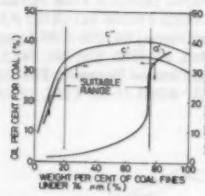
Hiroshi Yokoyama; Toshio Kuge; Shunsuke Nogita, all of Hitachi, and Yoichi Nakamura, Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 13, 1982, Ser. No. 449,195

Claims priority, application Japan, Dec. 18, 1981, 56-203552; Mar. 3, 1982, 57-32390

Int. Cl.³ C10L *5/16*

U.S. Cl. 44—23 **8 Claims**



4. An upgrading method for low-rank coal comprising the steps of:

(a) finely pulverizing the coal to provide an amount of coal particles having particle sizes of up to 74μ between 20 and 75 weight %,

(b) subjecting part of the finely pulverized coal to dry distillation at a temperature of from 200° 600° C. to obtain water, tar and dry-distilled coal,

(c) subjecting the balance of the finely pulverized coal to a non-evaporating heating treatment at a temperature of from 180° to 350° C. to reduce its water content and to distill tar,

(d) mixing the dry-distilled coal and the non-evaporatingly heated coal with water to obtain an aqueous slurry,

(e) adding the tar obtained by the dry distillation and the non-evaporating heating treatment to the slurry for agglomerating coal particles, and

(f) separating the agglomerated coal particles from water.

4,461,628

METHOD FOR THE GASIFICATION OF SOLID CARBONACEOUS FUEL

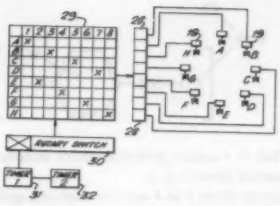
Dennis Hebden, Dorset, England, and Charles T. Brooks, Kinross, Scotland, assignors to British Gas Corporation, London, England

Continuation of Ser. No. 307,288, Sep. 30, 1981, abandoned. This application Jun. 9, 1983, Ser. No. 501,746

Claims priority, application United Kingdom, Jun. 9, 1981, 8117586

Int. Cl.³ C10J *3/08, 3/16*

U.S. Cl. 48—197 R **4 Claims**



1. A method of operating a gasifier having a column-like vessel in which a bed of ash-containing solid carbonaceous fuel is gasified by introducing a gasifying medium into a lower part of the fuel bed from m tuyeres disposed around the lower part of an inner wall of the vessel, m being an integer greater than 3, the gasification being carried out at a high temperature such that the ash collects in liquid form beneath the fuel bed, and in which the gasifying medium is caused to issue from the tuyeres either at a first velocity within the range three hundred to seven hundred feet per second and loading such that gasification extends to a central region of the fuel bed or at a second reduced velocity within the range one hundred to three hundred feet per second and loading such that gasification occurs only at an outer region of the fuel bed, said method further comprising providing a first, full operational loading mode wherein all of said m tuyeres are operated at the first velocity and loading and providing turndown from said full operational loading mode to a second, relatively lower operational loading mode by initiating a pulsing operation of the tuyeres wherein the gasifying medium is periodically caused to issue from n of the tuyeres at the second velocity and loading, n being an integer less than m, the gasifying medium being caused to issue from the remaining tuyere or tuyeres at the first velocity and loading, the velocity and loading of the gasifying medium issuing from all the m tuyeres being changed abruptly in a predetermined pattern such that each tuyere is supplied with gasifying medium at the second velocity and loading at selected frequent intervals and at the first velocity and loading at all other times.

4,461,629

HEAT RECOVERY PROCESS IN COAL GASIFICATION

Kenji Arisaki, Kure, Japan, assignor to Babcock-Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 228,775, Jan. 27, 1981, abandoned. This application Sep. 29, 1982, Ser. No. 427,689

Claims priority, application Japan, Jan. 29, 1980, 55-8296; Jan. 29, 1980, 55-8297; Jan. 29, 1980, 55-8298; Jan. 29, 1980, 55-8299; Jan. 29, 1980, 55-8300

Int. Cl.³ C10J *3/84*

U.S. Cl. 48—210 **15 Claims**

1. A process for the recovery of heat in coal gasification which comprises:

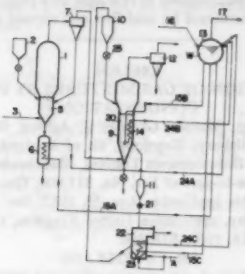
(a) generating gas in a coal gasification furnace;

(b) introducing the gas into a granular bed means provided with heat transfer tubes having cooling medium passing therethrough thereby cooling the gas;

(c) recovering the heat of the gas in the granular bed means as heated cooling medium;

(d) passing the gas cooled in (b) successively through a gas cooler and a scrubber, to cool the gas and remove dust and tar mist therefrom; and

recovering the heat of the gas cooled in step (d), wherein said granular bed means includes a fluidized bed cooler, in which said heat transfer tubes are located, and a granular moving bed filter, said gas being introduced into the fluidized bed cooler



and unnecessary substances including tars which are in the gas are adhered to the granules in the fluidized bed cooler and then the gas is introduced into the granular bed filter where dust in the gas is removed by adherence to the granules in the filter, and wherein the cooling medium is water, the heat of the generated gas is recovered in the form of high pressure steam through the heat transfer tubes in the granular bed means, the heat in the gas cooler and the scrubber is recovered in the forms of medium pressure steam and of low pressure steam respectively.

4,461,630

PRODUCT RECOVERY IN PRESSURE SWING ADSORPTION PROCESS AND SYSTEM

Robert T. Cassidy, Waldwick, N.J., and Kishore J. Doshi, Mahopac, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 30, 1982, Ser. No. 430,369

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—25 **20 Claims**

1. In a pressure swing adsorption process for the selective adsorption of at least one component of a feed gas mixture in an adsorption system having at least four adsorbent beds, each of which undergoes, on a cyclic basis, higher pressure adsorption, cocurrent depressurization from said higher adsorption pressure to upper intermediate pressure with release of void space gas from the product end of the bed for passage directly to another bed initially at lower pressure for pressure equalization therebetween at said upper intermediate pressure, further cocurrent depressurization from said upper intermediate pressure to lower intermediate pressure with release of void space gas from the product end of the bed for passage directly to another bed to provide purge gas to said other bed for the purge thereof at its lower desorption pressure, countercurrent depressurization from said lower intermediate pressure to said lower desorption pressure, purge at said lower desorption pressure with void space gas being passed directly from another bed being cocurrently depressurized from upper to lower intermediate pressure to said bed as purge gas for said purge at lower desorption pressure, partial repressurization from said lower desorption pressure to said upper intermediate pressure with the passage of void space gas from the product end of another bed initially at higher pressure for pressure equalization therebetween at said upper intermediate pressure, and final repressurization from upper intermediate pressure to said higher adsorption pressure, in which a portion of the void space gas released from one bed is passed to a bed(s) initially at a lower pressure to equalize the pressure therebetween and another portion thereof is used to provide purge gas for a bed undergoing said purge the improvement consisting essentially of:

(a) simultaneously with the passage of released void space gas from the product end of the bed directly to another bed to provide purge gas thereto upon further cocurrent depressurization of said bed from upper intermediate pressure to lower intermediate pressure introducing a portion of said released void space gas into an external purge drum; and

(b) passing said void space gas introduced into said external drum during step (a) above from said external drum and introducing said void space gas into a bed to be purged at lower desorption pressure for the purging thereof at said lower desorption pressure, in addition to purge gas introduced to said bed directly from another bed, prior to partial repressurization thereof by pressure equalization and final repressurization to higher adsorption pressure, the total purge time in each bed being significantly greater than said step (a) time, whereby the relatively short provide-purge time/long purge time enhances product recovery in each bed and in the overall adsorption system.

4,461,631

ZEOLITE ENCAPSULATING MATERIAL

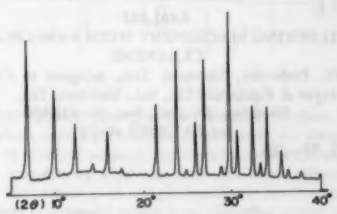
Keiji Itabashi, Sagamihara; Satoru Morishita, Kodaira, and Hisashi Hatotani, Tokyo, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin-nanyo, Japan

Continuation of Ser. No. 188,952, Sep. 19, 1980, abandoned. This application Jun. 28, 1982, Ser. No. 392,698

Claims priority, application Japan, Sep. 20, 1979, 54-120131

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—66 **2 Claims**



1. A method for occluding krypton comprising contacting krypton, at a temperature of 300° C. or lower and a pressure of 38 kg/cm²G or lower, with a zeolite having an effective pore absorption diameter less than the diameter of the krypton molecule, said zeolite having a composition expressed by a typical unit cell:

$$(K_xM_yNa_z)(AlO_2.SiO_2)_{12}.(NaAlO_2)\delta.\omega H_2O,$$

wherein M represents a divalent metal, $0<\delta<1$, ω represents a positive number and x, y and z, which respectively represent in said unit cell the numbers of potassium, the divalent metal and sodium, have the following relation:

$$x+2y+z=12$$

$$3\leqq x<10$$

$$1<y\leqq 4.5,$$

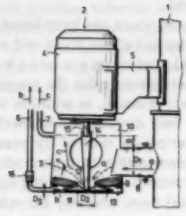
said divalent cations being substantially present at sites other than 8-member rings of said zeolite, whereby said krypton is encapsulated and occluded in said zeolite.

4,461,632

APPARATUS FOR TRANSFER OF LIQUID AND FOR REMOVAL OF GASES SEPARATING FROM LIQUIDS

Zoltán Banos; István Takacs; Endre Vereczkey, and Dezsö Vigh, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar R.T., Budapest, Hungary

Filed Nov. 30, 1982, Ser. No. 445,834
Claims priority, application Hungary, Dec. 1, 1981, 3612/81
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—190 30 Claims



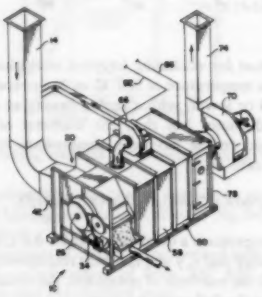
1. Apparatus for the transfer of liquids and the removal of gases from liquids, comprising a chamber, an impeller disposed in the chamber, means to rotate the impeller in the chamber, a separating wall dividing the chamber into an upper part and a lower part, a transfer port through the separating wall, the impeller having a shaft passing through the transfer port, the cubic capacity of the upper part exceeding the cubic capacity of the lower part and the impeller being disposed in the lower part, a liquid inlet port opening into the upper part, a liquid outlet port for the lower part, and a gas discharge outlet for the upper part.

4,461,633

AIR FILTERING MACHINERY WITH VARIABLE SPEED CLEANING

Paul W. Bodovsky, Sherman, Tex., assignor to Continental Conveyor & Equipment Co., Inc., Sherman, Tex.

Filed Sep. 28, 1982, Ser. No. 425,850
Int. Cl.³ B01D *46/04*
U.S. Cl. 55—283 6 Claims



1. An air filtering system comprising

a housing having an inlet for receiving particle ladened air to be filtered and an outlet for discharging cleaned air therefrom;

filter means mounted within the housing to receive therethrough a flow of air passing from the inlet to the outlet and for retaining filtered particles from the air moving through the filter means;

moveable mechanisms mounted within the housing for movement adjacent the filter means for the removal of filtered particles from said filter means;

drive means to move said moveable mechanisms;

first sensor means positioned adjacent the inlet to sense the air flow thereacross and second sensor means positioned adjacent the oulet to sense the airflow thereacross for determining the air pressure diffferential between the input and outlet of the system;

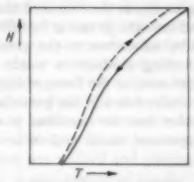
and means coupling said first and said second sensor means to the drive means to modify the speed of motion of the moveable mechanisms in response to a change in air pressure as determined by said first and second sensor means.

4,461,634

SEPARATION OF GAS MIXTURES BY PARTIAL CONDENSATION

Melvyn Duckett, Marple; Gregory J. Ashton, Stockport, and David R. Salisbury, Heywood, all of England, assignors to Petrocarbon Developments Limited, Manchester, England

Continuation-in-part of Ser. No. 311,006, Oct. 13, 1981, abandoned. This application Apr. 15, 1982, Ser. No. 368,709
Claims priority, application United Kingdom, Oct. 16, 1980, 8033468; Apr. 14, 1982, 8210820
Int. Cl.³ F25J *3/02*
U.S. Cl. 62—11 18 Claims



1. In a process for the separation of a gas mixture at a superatmospheric pressure which comprises cooling the mixture from a first temperature T_1 to a sub-ambient temperature T_2 to partially condense it, separating the thus-formed condensate from uncondensed vapour, subjecting the separated condensate to Joule-Thomson expansion and passing the thus-expanded condensate and uncondensed vapour as returning streams in indirect counter-current heat exchange relationship with the feed gas mixture to cool the latter, and which process would be rendered inoperable but for the below-named improvement by reason that for at least a part of the temperature range between T_1 and T_2, the sum of the enthalpies of the returning streams is not sufficiently greater than the enthalpy of the feed gas mixture; the improvement comprising providing a closed heat pump cycle in which a multi-component gaseous medium is condensed in a heat-emitting line at a superatmosphere pressure P_1 and over a first temperature range ΔT_A in indirect counter-current heat exchange relationship with said returning streams, the resulting condensate in said heat pump cycle is expanded by Joule-Thomson expansion to a lower pressure P_2, the expanded condensate is evaporated in a heat-absorbing line at the pressure P_2 in indirect counter-current heat exchange relationship with said feed gas mixture and over a second temperature range ΔT_B which is lower than the range ΔT_A, both said ranges ΔT_A and ΔT_B lying within the range defined by the temperatures T_1 and T_2, and the evaporated expanded condensate is returned for recompression to the pressure P_1 and is recycled, such that said multi-component gaseous medium in the heat pump cycle absorbs heat from the feed gas mixture in the lower range ΔT_B and transfers heat to said separated product streams in the higher temperature range ΔT_B sufficient to provide that at all points within the range defined by the temperatures T_1 and T_2 the temperature of the feed gas mixture is greater than the temperature of the returning separated product streams and the temperature difference

between the feed gas mixture and the returning separated product streams is small.

4,461,635

CRYOPUMP OR HEAT PUMP CIRCUIT

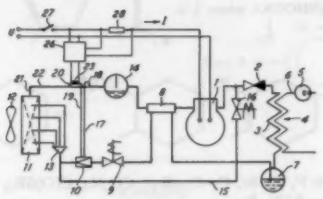
Viggo Rudebeck, Augustenborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Sep. 13, 1982, Ser. No. 417,458

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1981, 3139044

Int. Cl.³ G05D *23/30*; F25B *41/00*

U.S. Cl. 62—202 5 Claims



1. A heat pump assembly, comprising, a compressor, a condenser, and expansion valve which is settable for a predetermined superheating, an evaporator, said items being arranged in series including a suction line between said evaporator and said compressor, a sensor thermally connected to said suction line for sensing the dryness at the outlet of said evaporator for aiding in the control of said valve in accordance with the degree of dryness sensed at said outlet, auxiliary means for supplying sufficient supplementary heat to said sensor to effect the desired predetermined superheating, said auxiliary means normally supplying a substantially constant amount of supplementary heat to said sensor and a reduced amount when a predetermined load on said compressor is exceeded.

4,461,636

INSTALLATION FOR CONTINUOUS TREATMENT OF MOLTEN MATERIALS TO OBTAIN PELLETIZED PRODUCTS

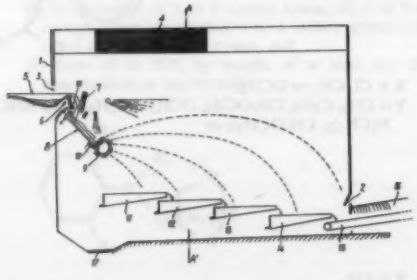
Francis Gagneraud, villa Montmorency, 6 Av. des Tilleuls, 75016 Paris, and Michel Gagneraud, 16 Boulevard Raspail, 75007 Paris, both of France

Filed May 25, 1983, Ser. No. 497,821

Claims priority, application France, Mar. 17, 1983, 83 04354

Int. Cl.³ C03B *19/10*

U.S. Cl. 65—141 6 Claims



1. Apparatus for treating molten mineral materials, including metallurgical slags, for recovery of expanded particles, granules or pelletized products, comprising

means for forming the molten material into a sheet and subjecting the molten sheet to spraying with water jets;

a rotary drum having blades and means to rotate said rotary drum in the path of the stream of partially expanded and water jet cooled molten material to fragment said stream and project the formed particles into the atmosphere where cooling continues; means for receiving the partially cooled particles projected by said rotary drum;

said rotary drum being fluid-tight and including internal cooling means for effecting cooling of said fluid-tight drum by internal circulation of water in a closed circuit;

said rotary, fluid-tight drum having blades of a scoop or chistera shape; and

said means for receiving the cooled particles comprising a series of vibratory tables arranged in a cascade, the last and farthest from said rotary drum of which receives the contents from the tables upstream thereof, and which last table delivers collected dry pellets onto a conveyor means.

4,461,637

CONTROL OF GLASSWARE FORMING MACHINE

Stanley P. Jones, Tickhill; Derek Gennard, Maltby, and Frank A. Fenton, Wheatley, all of England, assignors to Emhart Industries, Inc., Farmington, Conn.

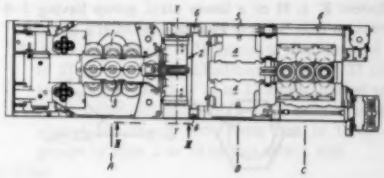
PCT No. PCT/GB82/00056, 371 Date Sep. 30, 1982, 102(e) Date Sep. 30, 1982, PCT Pub. No. WO82/02876, PCT Pub. Date Sep. 2, 1982

PCT Filed Feb. 22, 1982, Ser. No. 433,115

Claims priority, application United Kingdom, Feb. 27, 1981, 8106201

Int. Cl.³ C03B *9/40*

U.S. Cl. 65—158 11 Claims



1. An individual section glassware forming machine comprising a blank station including a blank mould for forming a parison in an inverted position, and transfer means driven by a motor for transferring a parison from the blank station and presenting the parison in an upright position at another station, characterised in that said motor is an electrical motor and in that the machine comprises generating means for generating an electrical command signal the magnitude of which varies in accordance with a desired position against time curve for the movement of a parison from the blank station to the said other station, and an electrical servo-mechanism operated by said electrical command signal said electric servo-mechanism operatively connected to said motor to control the movement of the transfer means.

4,461,638

DELIVERY OF PLANT NUTRIENTS

Vithal J. Rajadhyaksha, Mission Viejo, Calif., assignor to Nelson Research & Development Company, Irvine, Calif.

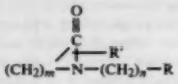
Continuation-in-part of Ser. No. 429,931, Sep. 30, 1982, which is a continuation-in-part of Ser. No. 310,948, Oct. 13, 1981, which is a continuation-in-part of Ser. No. 725,490, Oct. 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 588,247, Jun. 19, 1975, Pat. No. 3,989,816. This application Apr. 11, 1983, Ser. No. 484,024

Int. Cl.³ C05G *3/06*

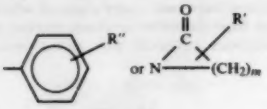
U.S. Cl. 71—27 6 Claims

1. Method for improved delivery of plant nutrients comprising contacting a plant with a composition comprising an effective amount of a plant nutrient and an effective delivery-

enhancing amount of compound having the structural formula

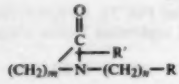


wherein R′ is H or a lower alkyl group having 1–4 carbon atoms, m is 3–7, n is 0–17 and R is —CH_3,

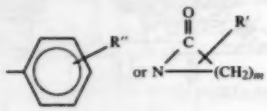


where R″ is H or halogen, with the proviso that if m is 3 and R is CH_3, then n is 5–17.

4. A composition comprising an effective amount of a plant nutrients and an effective, delivery enhancing amount of a compound having the structural formula



wherein R′ is H or a lower alkyl group having 1–4 carbon atoms, m is 3–7, n is 0–17 and R is —CH_3,



where R″ is H or halogen, with the proviso that if m is 3 and R is CH_3, then n is 5–17.

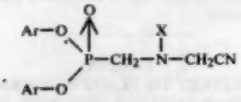
4,461,639

N-HALO PHOSPHONOMETHYLAMINE DERIVATIVES AS HERBICIDES

Rajendra K. Singh, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 22, 1982, Ser. No. 443,276
Int. Cl.³ A01N *57/22;* **C07F** *9/40*
U.S. Cl. 71—86 **10 Claims**

1. A compound having the formula:



wherein X is selected from the group consisting of bromine and chlorine; and Ar groups are each individually selected from the group consisting of mono- and di-substituted and unsubstituted aryl groups in which the substituents are selected from C_1 to C_4 alkyl, C_1 to C_3 alkoxy and halogen groups.

5. A herbicidal composition comprising from 5 to 95 parts by weight of a compound according to claim **1** an from 95 to 5 parts by weight of an adjuvant.

8. A herbicidal process which comprises applying to a plant a herbicidally effective amount of a composition according to claim **5**.

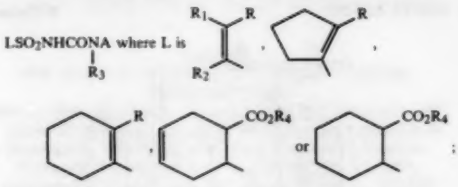
4,461,640

HERBICIDAL ALKENYL SULFONAMIDES

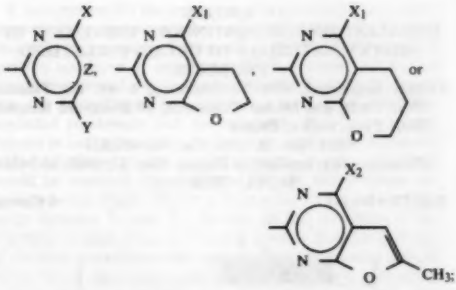
George Levitt, Wilmington, Del., and William T. Zimmerman, Landenberg, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 328,115, Dec. 7, 1981, abandoned. This application Jun. 2, 1982, Ser. No. 383,323
Int. Cl.³ C07D *239/42, 251/42;* **A01N** *43/66, 43/54*
U.S. Cl. 71—92 **39 Claims**

1. A compound of the formula:



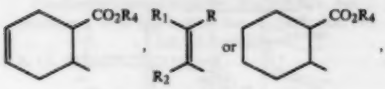
R is F, Cl, Br, C_1–C_3 alkyl, CO_2R_4, $C(O)SR_8$, $C(O)NR_5R_6$ or $S(O)_mR_7$;
R_1 is H, F, Cl, Br or C_1–C_3 alkyl;
R_2 is H, F, Cl, Br or C_1–C_3 alkyl;
R_3 is H or CH_3;
R_4 is C_1–C_4 alkyl, $CH_2CH_2OCH_3$, CH_2CH_2Cl or $CH_2CH{=}CH_2$;
R_5 is H or C_1–C_3 alkyl;
R_6 is C_1–C_3 alkyl; or
R_5 and R_6 may be taken together to form —$(CH_2)_4$—, —$(CH_2)_5$— or —$(CH_2)_2O(CH_2)_2$—;
R_7 is C_1–C_3 alkyl;
R_8 is C_1–C_4 alkyl;
m is 0, 1 or 2;
A is



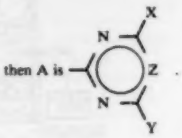
X is Cl, CH_3 or OCH_3;
Y is CH_3, C_2H_5, CH_2OCH_3, OCH_3, OC_2H_5, NH_2, $NHCH_3$, $N(CH_3)_2$, $CH(OCH_3)_2$ or

Z is CH;
X_1 is H, Cl, CH_3, OCH_3 or OC_2H_5; and
X_2 is CH_3, C_2H_5, OCH_3 or OC_2H_5;
and their agriculturally suitable salts; provided that:
(1) when R is halogen and R_1 and/or R_2 are halogen, then the values of R, R_1 and R_2 must be the same;
(2) when R_1 and R_2 are halogen, then the values of R_1 and R_2 must be the same;

(3) the total number of carbon atoms of R_5 and R_6 is less than or equal to 5;
(4) when X is Cl, then Z is CH and Y is OCH_3, NH_2, $NHCH_3$ or $N(CH_3)_2$;
(5) R_1 and R_2 are not simultaneously H; and
(6) when L is



then A is



4,461,641

HERBICIDAL MIXTURES

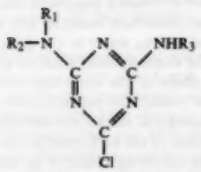
Uwe Abildt, Grenzach-Wyhlen, Fed. Rep. of Germany, and Theodor Langauer, Muttenz, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 25, 1982, Ser. No. 352,437
Int. Cl.³ A01N *25/02, 25/00*
U.S. Cl. 71—93 **4 Claims**

1. A flowable herbicidal composition having at least one solid disperse phase and a continuous aqueous phase comprising

(a) combination of

(i) from 10 to 50% by weight of at least chlorotriazine of the formula:



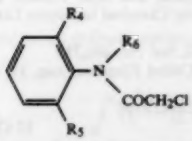
wherein

R_1 is alkyl of 1 to 4 carbon atoms,

R_2 is hydrogen or alkyl of 1 to 4 carbon atoms, and

R_3 is cycloalkyl of 3 or 4 carbon atoms, alkyl of 1 to 4 carbon atoms, or alkyl of 1 to 4 carbon atoms substituted with methoxy or cyano; and

(ii) from 10 to 50% by weight of at least one chloroacetanilide of the formula

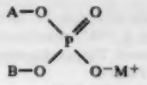


wherein

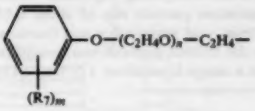
each of R_4 and R_5, independently of the other, is methyl or ethyl and

R_6 is alkynyl of 3 or 4 carbon atoms, alkyl of 1 to 3 carbon atoms, or alkyl of 1 to 3 carbon atoms substituted with alkoxy of 1 to 4 carbon atoms, ethoxy carbonyl, or pyrazolyl;

(b) a surfactant system consisting essentially of (i) from 1 to 10% by weight of at least one anionic surfactant of the formula:



wherein A is



in which

R_7 is hydrogen, alkyl of 3 to 10 carbon atoms or styryl;

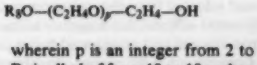
n is an integer of from 4 to 40 and

m is an integer of from 1 to 4;

B is hydrogen or A; and

M is a proton or a sodium, potassium or triethanolammonium cation; and

(ii) from 0.5 to 10% by weight of at least one nonionic polyglycol ether surfactant, said surfactant including a compound of the formula:



wherein p is an integer from 2 to 44, and

R_8 is alkyl of from 12 to 18 carbon atoms, alkanoyl of 12 to 22 carbon atoms, alkadienoyl of 12 to 22 carbon atoms, alkatrienoyl of 12 to 22 atoms, phenyl substituted with cycloalkyl of 5 to 8 carbon atoms or phenyl substituted with from one to three alkyl groups of from 3 to 10 carbon atoms, and

(c) water.

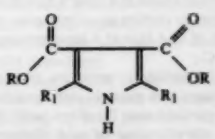
4,461,642

HERBICIDAL COMPOSITIONS AND METHOD

Robert K. Howe, Bridgeton, and Len F. Lee, St. Charles, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 8, 1982, Ser. No. 356,012
Int. Cl.³ A01N *43/36*; C07D *207/333*
U.S. Cl. 71—95 **13 Claims**

1. A method for controlling the growth of undesirable plants which comprises applying to the locus of the seed a herbicidal amount of a compound represented by the formula



wherein R represents a lower alkyl radical having 1 to 4 carbon atoms and R_1 represents a perfluoroalkyl radical having from 1 to 3 carbon atoms.

4,461,643

FRICTION LINING MATERIAL

Edward R. Kaufman, Andover, Mass., assignor to Glennco Trust, Lawrence, Mass.

Continuation-in-part of Ser. No. 402,831, Jul. 29, 1982, abandoned, and Ser. No. 259,857, May 4, 1981, abandoned, and Ser. No. 98,996, Nov. 30, 1979, abandoned. This application Sep. 30, 1982, Ser. No. 430,775

Int. Cl.³ C08K *3/14, 3/18;* **C08J** *5/14*

U.S. Cl. 106—36 **14 Claims**

1. A friction material substantially free of asbestos for use as a brake lining and the like comprising expanded vermiculite having an average minimum particle size of about 0.15 mm. and a thermosetting resin, said vermiculite and thermosetting resin being present in the friction material in a weight ratio of resin-to-vermiculite in a range from about 1.5/1 to 0.15/1.

4,461,644

LIGHT WEIGHT COMPOSITION AND A METHOD OF SEALING A SUBTERRANEAN FORMATION

Jerry D. Childs, Duncan; Lance E. Brothers, Lawton, and Joseph R. Murphey, Duncan, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 29, 1983, Ser. No. 490,089

Int. Cl.³ C04B *7/35*

U.S. Cl. 106—76 **20 Claims**

1. A cement composition having a density of from about 11.0 to about 16.0 pounds and comprising:

(a) a hydraulic cement;

(b) a silicate compound selected from the group consisting of an aqueous alkali metal silicate, an aqueous ammonium silicate and mixtures thereof said compound being present in the range of from about 0.40 percent to about 3.40 percent by weight of hydraulic cement;

(c) sea water present in the range of from about 42 percent to about 190 percent by weight of hydraulic cement; and

(d) a hydroxide compound selected from the group consisting of an alkali metal hydroxide, ammonium hydroxide, calcium hydroxide, and mixtures thereof said hydroxide compound present in the range of from about 0.2 percent to about 2.0 percent by weight of the sea water;

wherein said hydroxide compound is added to the sea water before the silicate compound and the hydraulic cement is added to the sea water.

4,461,645

METHOD OF AND APPARATUS FOR THE COOLING OF WHITE CEMENT CLINKER

Gunter Roth, Munich; Wolfram Quittkat, Gauting; Dieter Frank, Munich; Ludwig Muller, Germering, and Wilhelm Grassmann, Munich, all of Fed. Rep. of Germany, assignors to BKMI Industrieanlagen GmbH, Munich, Fed. Rep. of Germany

Filed May 24, 1982, Ser. No. 381,738

Claims priority, application Fed. Rep. of Germany, May 23, 1981, 3120383

Int. Cl.³ C04B *7/50*

U.S. Cl. 106—100 **12 Claims**

1. A method of making white cement clinker, comprising the steps of:

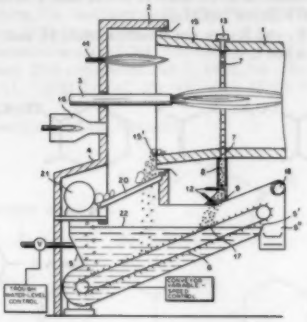
burning white cement clinker solids in a rotary kiln to sinter said solids into white cement clinker at a sinter zone proximal to a discharge end of said kiln at a temperature substantially above 1200° C.;

classifying said clinker immediately upon its emergence from said zone into at least two particle size fractions;

quenching each of said particle size fractions with water immediately upon the classification of said clinker into said fractions at a temperature below 1200° C.;

maintaining each of said particle size fractions in contact with the quenching water for residence time determined by the particle size fraction; and

terminating the contact of said clinker with quenching water prior to complete cooling of the clinker whereby said



fractions retain sufficient sensible heat to drive moisture therefrom.

4,461,646

PROCESS FOR FOAM LOWERING IN DISPERSED ROSIN SIZE

John W. Gowan, Jr., Mt. Pleasant, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Apr. 21, 1983, Ser. No. 487,338

Int. Cl.³ C08L *93/04;* **C09F** *1/04*

U.S. Cl. 106—238 **10 Claims**

1. In a process for preparing an aqueous dispersion of a rosin-base material by mixing together a melt of the rosin-base material, a surfactant and water to obtain a dispersion comprising a continuous phase of the rosin-base material and a dispersed phase of the water, and adding water to the dispersion to invert the dispersioan to the contemplated aqueous dispersion comprising a dispersed phase of the rosin-base material and a continuous phase of the water, the improvement comprising the step of adding an inorganic salt to at least a portion of the surfactant prior to addition of the surfactant to the melt of the rosin-base material, said salt being added in an amount sufficient to lower the foaming tendency of the aqueous dispersion whereby a generally reduced level of surfactant is required to establish the aqueous dispersion.

4,461,647

FLUIDIZING AGENT

John D. Schofield, Bury, England, and Arne Vinther, Koge, Denmark, assignors to Imperial Chemical Industries Limited, London, England

Filed Jul. 26, 1982, Ser. No. 401,713

Claims priority, application United Kingdom, Aug. 11, 1981, 8124507

Int. Cl.³ C09C *1/00*

U.S. Cl. 106—308 N **12 Claims**

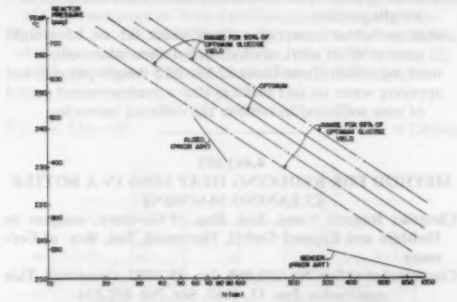
1. A composition of disazo compounds which contains at least 30%, by weight, of a water-insoluble asymmetric compound disazo compound, the asymmetric compound, comprising a central divalent group free from acidic and other ionic substituents linked through azo groups to two monovalent end groups characterised in that one end group, the first, is free from acidic and other ionic substituents and the other end group, the second, carries a single substituted ammonium-acid salt group.

4,461,648

METHOD FOR INCREASING THE ACCESSIBILITY OF CELLULOSE IN LIGNOCELLULOSIC MATERIALS, PARTICULARLY HARDWOODS AGRICULTURAL RESIDUES AND THE LIKE

Patrick Foody, 3870 Cote Vertu, St. Laurent, Quebec, Canada (H4R1V4)

Continuation-in-part of Ser. No. 168,326, Jul. 7, 1980, abandoned. This application Jua. 1, 1981, Ser. No. 269,185
Int. Cl.[3] A23K 1/12
U.S. Cl. 127—37 38 Claims



1. An improved method for increasing the accessibility of cellulose in lignocellulosic materials, such as hardwoods, bagasse and the like, to rumen bacteria, enzymes, microorganisms and the like, characterized by an optimization of a range of cooking times (t_c) which will respond to the actual pressure conditions in the reactor as they may change over time during a given cooking run and render the cellulose most open for attack by said microorganisms or enzymes, as measured by the rate or extent of their reaction, said method comprising the steps of:

(a) feeding lignocellulosic material, in a divided form, into a pressure reactor vessel; and

(b) introducing pressurized steam into the vessel during a pressurization time phase so as to reach reactor pressures of between 250 and 1000 psig wherein said reactor pressures does follow a given time profile; and

(c) cooking by maintaining the lignocellulosic material at said time variable pressures between 250 and 1000 psig for a total period of time (t_c) in seconds, which includes the pressurization phase, wherein $t_3 \leqq t_c \leqq t_4$ and the given reactor pressure time profile is used to determine t_3 and t_4 for that given cook run since t_3 is defined implicitly by

$$\int_0^{t_3} 2\left(\frac{T_s - 250}{10}\right) dt = 58$$

and t_4 and defined implicitly by

$$\int_0^{t_4} 2\left(\frac{T_s - 250}{10}\right) dt = 115$$

wherein T_s is the temperature (°C.) of saturated steam, at the indicated reactor pressures and corresponds to the saturated steam temperature values along the indicated reactor pressure time profile, thereby also making T_s a given function of time (t); and

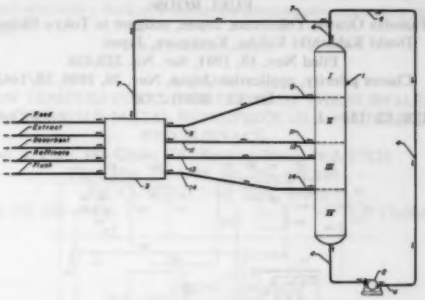
(d) decompressing the cooked lignocellulosic material down to substantially atmospheric pressure at the end of said cooking time, t_c.

4,461,649

DESORPTION TECHNIQUE

Richard W. Neuzil, Downers Grove, and Chin-Hsiung Chang, Palatine, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed May 2, 1983, Ser. No. 490,594
Int. Cl.[3] C13D 3/12
U.S. Cl. 127—46.1 8 Claims



1. A process for separating an extract component from a solution containing said extract component and at least one raffinate component which process comprises contacting at adsorption conditions said solution with a solid adsorbent exhibiting selectivity for said extract component which process comprises the steps of:

(a) maintaining net fluid flow through a column of said adsorbent in a single direction, which column contains at least three zones having separate operational functions occurring therein and being serially interconnected with the terminal zones of said column connected to provide a continuous connection of said zones;

(b) maintaining an adsorption zone in said column, said zone defined by the adsorbent located between a feed inlet stream at an upstream boundary of said zone and a raffinate outlet stream at a downstream boundary of said zone;

(c) maintaining a purification zone immediately upstream from said adsorption zone, said purification zone defined by the adsorbent located between an extract outlet stream at an upstream boundary of said purification zone and said feed inlet stream at a downstream boundary of said purification zone;

(d) maintaining a desorption zone immediately upstream from said purification zone, said desorption zone defined by the adsorbent located between a flush liquid inlet stream at an upstream boundary of said zone and said extract outlet stream at a downstream boundary of said zone;

(e) passing said feed stream into said adsorption zone at adsorption conditions to effect the selective adsorption of extract component by said adsorbent in said adsorption zone and withdrawing a raffinate outlet stream from said adsorption zone;

(f) passing a desorbent into said desorption zone between the upstream and downstream boundaries of said zone at desorption conditions to effect the displacement of said extract component from the adsorbent in said desorption zone, said adsorbent exhibiting an affinity for said desorbent which significantly reduces the selectivity of said adsorbent for said extract component in the presence of said desorbent;

(g) passing a flush liquid inlet stream into said desorption zone at the upstream boundary of said zone to effect the flushing of said desorbent from said adsorbent in said desorption zone; and

(h) withdrawing an extract stream comprising said extract component and desorbent material from said desorption zone.

3. The process of claim 1 wherein said extract component

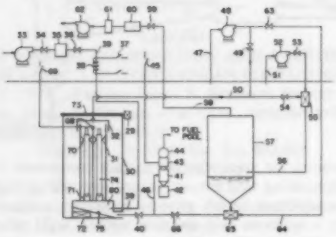
comprises sucrose and said raffinate component is selected from the group consisting of betaine or a mineral salt.

4,461,650

METHOD FOR REMOVING SCALE FROM NUCLEAR FUEL RODS

Tamotsu Ozawa, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Nov. 19, 1981, Ser. No. 323,126
Claims priority, application Japan, Nov. 26, 1980, 55/166378
Int. Cl.³ B08B 5/00
U.S. Cl. 134—1 6 Claims



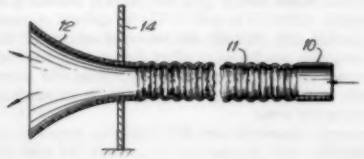
1. A method of removing scale deposited on a nuclear fuel rod assembly during operation thereof in a boiling water type nuclear reactor, comprising the steps of disposing said nuclear fuel rod assembly in a substantially sealed chamber while said scale is wet with water, and drying said wet scale by circulating a gas in the chamber heated to a temperature higher than room temperature, thus peeling off dried scale from said nuclear fuel rod assembly.

4,461,651

SONIC CLEANING DEVICE AND METHOD

Richard I. Hall, St. Catherines, Canada, assignor to Foster Wheeler Limited, St. Catherines, Canada

Filed Feb. 8, 1983, Ser. No. 464,842
Int. Cl.³ B08B 7/00
U.S. Cl. 134—1 18 Claims



8. A method for removing accumulated fine particles from surfaces using sonic energy, comprising:

(a) passing a gas through an internally corrugated tube and an expanding horn connected in series flow relation, said gas having a superficial velocity in the tube of 25–200 ft./sec., and generating sound vibrations in the gas within said tube and amplifying said vibrations to produce an increased sound intensity from the horn;

(b) directing said horn toward a surface to be cleaned, and fluidizing the accumulated particles on the surface, and

(c) removing the fluidized particles from said surface, by the flowing gas.

4,461,652

BARNACLE REMOVAL PROCESS AND PRODUCT

Therezia L. Richmond, Box 116, Buffalo, N.Y. 14222

Filed Sep. 13, 1982, Ser. No. 417,216
Int. Cl.³ C23G 5/02; B08B 3/04; C11D 3/48, 3/395
U.S. Cl. 134—2 5 Claims

1. A process for removing barnacles from the surfaces of marine vessels and the like, including the steps of:

spraying on said surfaces a composition comprising

a hydrocarbon oil from about 15 to about 35 weight percent;

a surfactant from about 1.5 to 6 weight percent;

an alcohol from about 0 to 2 weight percent;

a metal hypochlorite soluble in said oil from about 0.5 to 5 weight percent

said surfactant comprising from about 0.5 to 1.5 weight percent of an alkyl, dialkyl benzyl ammonium salt;

inert ingredients from about 82.5 to 50.5 weight percent; and

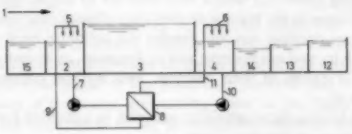
spraying water on said surfaces after a predetermined period of time sufficient to remove the softened barnacles.

4,461,653

METHOD FOR REDUCING HEAT LOSS IN A BOTTLE CLEANING MACHINE

Christian Rüppell, Unna, Fed. Rep. of Germany, assignor to Holstein und Kappert GmbH, Dortmund, Fed. Rep. of Germany

Continuation of Ser. No. 230,068, Jan. 29, 1981, abandoned. This application Jan. 11, 1983, Ser. No. 457,134
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1980, 3003663
Int. Cl.³ B08B 3/10
U.S. Cl. 134—10 2 Claims



1. Method of reducing the heat loss occurring in moving bottles and vessel carriers in bottle cleaning machines containing several treatment baths at different temperatures, arranged one behind the other with the bottles and vessel carriers passing, in turn, through the baths, and the baths including a lye treatment bath with a temperature in the range of 80° to 90° C., characterized therein by arranging a pre-heating zone immediately upstream from the lye treatment bath and a re-cooling zone immediately downstream from the lye treatment bath in the direction of the movement of the vessel carriers so that the bottles and vessel carriers pass directly from the pre-heating zone into the lye treatment bath and from the lye treatment bath directly into the re-cooling zone, showering a first liquid over the bottles in the vessel carriers in the pre-heating zone for heating the bottles about to enter the lye treatment bath, collecting the showered first liquid in the pre-heating zone, showering a second liquid over the bottles in the vessel carriers in the re-cooling zone for cooling the bottles after their passage through the lye treatment bath, collecting the showered second liquid in the re-cooling zone, removing the first liquid collected in the pre-heating zone to a location exterior of the pre-heating zone, the lye treatment bath and the re-cooling zone, removing the second liquid collected in the re-cooling zone to the location exterior of the re-cooling zone, the lye treatment bath and the pre-heating zone at the exterior location passing the removed first liquid from the pre-heating zone in indirect heat transfer relation with the removed second liquid from the re-cooling zone for heating the first liquid and cooling the second liquid and returning the heated first liquid to the pre-heating zone and showering the bottles and vessel carriers in the pre-heating zone with the heated first liquid and return-

ing the cooled second liquid to the re-cooling zone and showering the bottles and vessel carriers in the re-cooling zone with the cooled second liquid whereby the heat removed from the re-cooling zone is used for pre-heating the bottles and vessel carriers in the pre-heating zone before entering the lye treatment bath and the cooled second liquid is used to cool the bottles and vessel carriers in the re-cooling zone so that heat losses due to excessive heat carry-off are avoided.

4,461,654

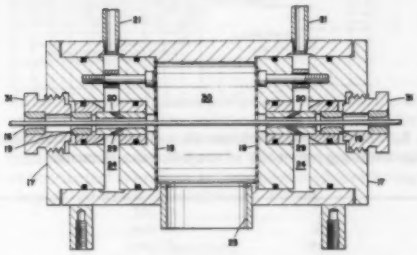
METHOD FOR REMOVING SCALE DUST FROM STEEL ROD AFTER MECHANICAL DESCALING

Stanley L. Stalson, Richfield, and William H. Johns, Stow, both of Ohio, assignors to Wire Lab Company, Richfield, Ohio

Division of Ser. No. 356,482, Mar. 9, 1982, Pat. No. 4,394,786, which is a continuation-in-part of Ser. No. 152,354, May 22, 1980, abandoned. This application Mar. 2, 1983, Ser. No. 471,281

Int. Cl.³ B08B *5/02*

U.S. Cl. 134—10 **6 Claims**



1. A waterless method for removing particles from a wire strand, the method comprising:

moving the strand continuously through an entrance nozzle region of a housing from an upstream entrance opening in said housing, a central chamber region of said housing, and an exit nozzle region of said housing toward a downstream exit opening in said housing;

directing jets of compressed air into the entrance nozzle region toward the central chamber in such a manner that a venturi effect is created drawing air through the entrance nozzle region and mixing the air with scale particles freed from the strand, whereby the venturi effect prevents particles from escaping through the entrance nozzle region to the upstream entrance opening;

directing jets of compressed air into the exit nozzle region toward the central region in such a manner that a venturi effect is created drawing air through the exit nozzle region and mixing the air with particles freed from the strand, whereby the venturi effect prevents scale particles from escaping through the exit nozzle region to the downstream exit opening; and,

collecting the scale particles carried into the central region.

4,461,655

FUSED SALT BATH COMPOSITION

David H. Kerridge, Salisbury, England, assignor to National Research Development Corporation, London, England

Filed Feb. 23, 1983, Ser. No. 469,128

Claims priority, application United Kingdom, Feb. 23, 1982, 8205348

Int. Cl.³ C23C *9/12*

U.S. Cl. 148—15.5 **10 Claims**

1. A salt composition for use in a fused-salt metal heat treatment bath containing, as its cations, 20–30 mole % potassium 3½–5½ mole % lithium, and the balance substantially sodium, and containing, as its anions, up to 25 mole % chloride and the balance substantially carbonate, provided that precursors of any of these ions count as the ion, the basis for the mole percents of cations being the total moles of cations and the basis for the mole percents of anions being the total moles of anions, and further provided that the liquidus temperature of the overall composition is not more than 750° C., the composition further containing 1 to 40 weight % silicon carbide based on the total weight of said cations and anions.

7. A method of heat treating metal, comprising treating a metal article in a bath of a fused salt composition according to claim 1.

4,461,656

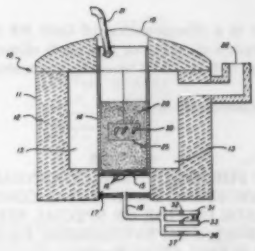
LOW TEMPERATURE HARDENING OF THE SURFACE OF A FERROUS METAL WORKPIECE IN A FLUIDIZED BED FURNACE

John A. Ross, 188 Childs Rd., Basking Ridge, N.J. 07920

Filed Mar. 15, 1983, Ser. No. 475,490

Int. Cl.³ C21D *1/48*; C23C *9/14*

U.S. Cl. 148—16.6 **17 Claims**



1. A method for treating the surface of a ferrous metal workpiece comprising:

providing a fluidized bed furnace having a bed of metallurgically non-reactive particulate material which is thermally conductive in a fluidized state;

heating said bed to a temperature of about 600° F. to 1250° F.;

fluidizing said heated bed of particulate material with a gas atmosphere consisting essentially of a source of nascent nitrogen and a source of carbon with the remainder of said atmosphere being non-reactive gas and unavoidable impurities;

disposing said ferrous metal workpiece to be treated in said heated fluidized bed;

whereby said nitrogen and carbon react with the surface of said ferrous metal workpiece disposed in said heated fluidized bed to provide a compound layer and an underlying diffusion zone on the surface of said workpiece.

4,461,657

HIGH STRENGTH STEEL AND GAS STORAGE CYLINDER MANUFACTURED THEREOF

Mahendrasinh D. Rana, North Tonawanda, and Ronald J. Selines, North Salem, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed May 19, 1983, Ser. No. 496,078

Int. Cl.³ C22C *29/00*

U.S. Cl. 148—36 **11 Claims**

1. In a gas storage cylinder enclosed at one end and exhibiting leak-before-break behavior, the improvement, whereby increased cylinder efficiency, ultimate tensile strength, fracture toughness and fire resistance are attained, comprising a cylinder shell of a low alloy steel consisting essentially of:

(a) from 0.28 to 0.50 weight percent carbon;

(b) from 0.6 to 0.9 weight percent manganese;

(c) from 0.15 to 0.35 weight percent silicon;

(d) from 0.8 to 1.1 weight percent chromium;
(e) from 0.15 to 0.25 weight percent molybdenum
(f) from 0.005 to 0.05 weight percent aluminum;
(g) from 0.04 to 0.10 weight percent vanadium;
(h) not more than 0.040 weight percent phosphorus;
(i) not more than 0.015 weight percent sulfur;

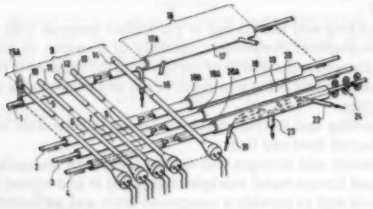
(j) calcium in a concentration of from 0.8 to 3 times the concentration of sulfur, or rare earth element(s) in a concentration of from 2 to 4 times the concentration of sulfur; and
(k) the remainder of iron.

4,461,658

METHOD FOR SEQUENTIALLY ANNEALING AND THEN HARDENING LONG METAL COMPONENTS MADE OF FINE OR SPECIAL STEEL

Jean-Claude Bourget, Issy les Moulineaux, France, assignor to Les Cables de Lyon, Clichy, France

Division of Ser. No. 362,324, Mar. 26, 1982. This application Jun. 21, 1983, Ser. No. 506,270
Claims priority, application France, Mar. 31, 1981, 81 06443
Int. Cl.³ C21D *1//18*
U.S. Cl. 148—127 **1 Claim**



1. A method of sequentially annealing and quenching armoured electric, components, said components including at least a conductor core, a coating of mineral insulant and an outer sheath of fine or special steel with an austenitic structure, said method comprising the steps of:

causing said components to pass respectively through longitudinal parallel muffles,

applying heat along an upstream portion of the muffles by energizing resistors exterior of the muffles which resistors are parallel to another and disposed perpendicularly to the direction in which the components pass through the muffles for homogeneously heating and simultaneously annealing said sheath and said core during passage through the upstream portion of said muffles, while applying a reducing or neutral atmosphere thereto, and

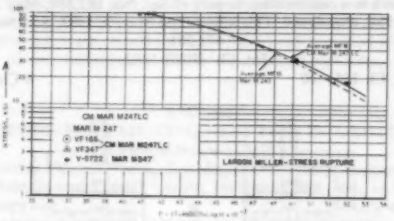
quenching said armored electric components within a downstream portion of said longitudinal muffles by direct contact of said components with a flow of cooling fluid and adjusting the flow rate and temperature of the cooling fluid so that the components undergo no transformation of their austenitic structure during quenching.

4,461,659

HIGH DUCTILITY NICKEL ALLOY DIRECTIONAL CASTING OF PARTS FOR HIGH TEMPERATURE AND STRESS OPERATION

Kenneth Harris, Spring Lake, Mich., assignor to Cannon-Muskegon Corporation, Muskegon, Mich.

Continuation-in-part of Ser. No. 113,037, Jan. 17, 1980, abandoned. This application Jun. 24, 1981, Ser. No. 276,890
Int. Cl.³ C22C *19/05*
U.S. Cl. 148—404 **8 Claims**



1. A low carbon nickel base alloy directional solidified casting consisting essentially of the following elements:

C	.07–.09
Si	.03 max.
Mn	.10 max.
P	.005 max.
S	20 ppm max.
Cr	7.5–8.5
Co	9.0–9.5
Mo	0.4–0.6
W	9.3–9.7
Ti	0.6–0.9
Al	5.4–5.7
Ta	3.1–3.3
Hf	1.4–1.6
B	0.01–0.02
Zr	.007–.015
Fe	.2 max.
Cu	.05 max.
Cb	.10 max.
Mg	80 ppm max.
Pb	2 ppm max.
Se	1.0 ppm max
Bi	.3 ppm max
Te	.5 ppm max
Tl	.5 ppm max
[N] ppm	15 max.
[O] ppm	10 max.
Nv3B	2.15 max.
Ni	Balance.

4,461,660

BULK MANUFACTURE OF EMULSION EXPLOSIVES

Rejean Binet, St. Bruno; William E. Cribb, Pointe Claire; Anthony C. F. Edmonds, Burlington, and Melvin A. McNicol, Otterburn Park, all of Canada, assignors to C-I-L Inc., North York, Canada

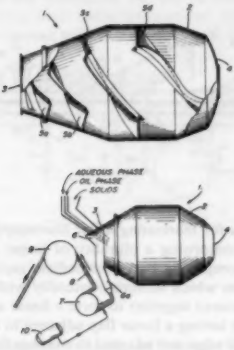
Filed Jun. 8, 1983, Ser. No. 502,297
Claims priority, application Canada, Jun. 21, 1982, 405639
Int. Cl.³ C06B *45/00*
U.S. Cl. 149—2 **8 Claims**

1. A method of manufacture of a high phase ratio water-in-oil emulsion explosive composition which is insensitive to blasting cap initiation comprising the steps of:

(a) introducing a measured quantity of an oil/surfactant

phase into an internally baffled, substantially cylindrical, reversibly rotatable drum mixer having an internal diameter of at least 1.5 meter and preferably 1.5 to 2.5 meter,

(b) rotating said drum mixer about its longitudinal axis at between 8–16 revolutions per minute, while adding



thereto a measured quantity of an aqueous phase, the said aqueous phase addition being made continuously over a period of not less than 10 minutes to permit a free fall of material within the drum at a drop velocity of 5 to 7 meter/second to produce an emulsified explosive having a droplet size distribution of from 1–10 μm.

4,461,661

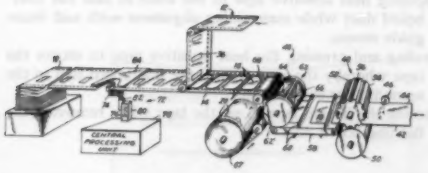
NON-TENTING BUSINESS FORM ASSEMBLIES AND METHOD AND APPARATUS FOR MAKING THE SAME

Warren M. Fabel, 7 Peters La., Pound Ridge, N.Y. 10756

Division of Ser. No. 132,515, Mar. 21, 1980, abandoned, which is a continuation-in-part of Ser. No. 19,150, Mar. 9, 1979, abandoned. This application Dec. 18, 1981, Ser. No. 332,197

Int. Cl.³ B32B *31/10, 31/18;* B65D *27/10*

U.S. Cl. 156—70 **17 Claims**



16. A method of producing a series of multi-ply business form assemblies comprising the steps of advancing continuous at least upper and lower webs, and a transfer medium between at least some of said webs for selectively printing thereon, each of said upper and lower webs being provided with a series of longitudinally spaced generally transverse perforated lines of weakening to define a plurality of successive sets of front and back sheets, at least one of said sheets of each set being selectively provided on the surface portions facing the other of said sheets with a dormant adhesive in heat transfer relationship with an electromagnetic reactant which generates heat when exposed to electromagnetic radiation; and selectively activating said adhesive by selectively directing electromagnetic radiation at said dormant adhesive and said electromagnetic reactant on at least some of said surface portions on successive sets of front and back sheets to form sealing lines having generally negligible thicknesses and uniform widths along their lengths thereby forming a series of business form assemblies each having a receiving compartment and being detachable from each other at said transverse perforated lines of weakening.

17. A method of producing a series of business form assemblies as defined in claim **16**, further comprising the step of arranging an insert between each set of front and back sheets, said insert having dimensions generally smaller than those of said sheets to provide surface portions on said sheets which face each other when said sheets are superimposed, whereby each receiving compartment at least partially captivates an associated insert to form a series of business form assemblies.

4,461,662

ULTRASONIC WELDING APPARATUS

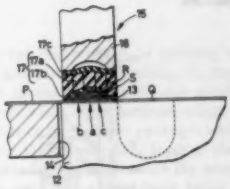
Heizo Onishi, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Feb. 1, 1983, Ser. No. 462,952

Claims priority, application Japan, Feb. 9, 1982, 57-16605[U]; Apr. 7, 1982, 57-50074[U]; Aug. 31, 1982, 57-131842[U]

Int. Cl.³ B29C *27/08*

U.S. Cl. 156—73.4 **17 Claims**



1. A process for seam-welding sheet-like workpieces at their overlapped portions on an ultrasonic welding apparatus including a working horn connected to an electroacoustic converter, and a presser having a contact surface facing a working surface of of the working horn, said process comprising the steps of:

using an elastic member having a surface to serve as said contact surface of said presser;

placing said workpieces on said working surface of the horn such that edge portions of the workpieces are folded and overlapped on each other so as to provide a thick portion raised above the plane of the sheet-like workpieces,

effecting a relative movement between said presser and said horn toward each other in a direction perpendicular to said working surface until said contact surface of the presser comes into contact with said thick portion of the workpieces;

forcing said thick portion and neighboring level portions adjacent to said thick portion against said working surface by effecting a further relative movement between the presser and said horn while allowing said presser to be inwardly elastically deformed at said elastic member so that said contact surface is adapted to follow the shape of said thick portion of the workpieces, thereby providing said thick portion and said level portions with a substantially uniform pressure against said working surface; and

activating said electroacoustic converter to apply ultrasonic oscillation to said horn and produce frictional heat between said horn and said presser for welding said workpieces at said thick portion.

6. An ultrasonic welding apparatus comprising:

a working horn connected to an electroacoustic converter and having a working surface;

a presser disposed in opposition to said working surface, said presser being provided on its surface facing said working surface with an elastic member of multi-layer structure which comprises a first inner layer made of foam rubber material and disposed on the presser side, and a second outer layer made of silicone family rubber material and disposed on the working horn side; and

pressing means which is operatively connected to said

presser for biasing said presser toward said working surface, to weld workpieces overlapped one above the other and held in forced contact with and between said working surface and said presser.

4,461,663

METHOD OF MOUNTING A REMOVABLE PRINTING SLEEVE ON A CORE UTILIZING A HOT MELT ADHESIVE

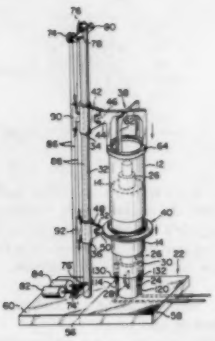
Eiichi Tachibana, Toda; Koushou Murayama, Kawasaki, and Kenzo Isumi, Kameoka, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1981, Ser. No. 326,500

Claims priority, application Japan, Dec. 4, 1980, 55-171318; Mar. 5, 1981, 56-31530; May 22, 1981, 56-76498; May 22, 1981, 56-76499; May 22, 1981, 56-76500

Int. Cl.³ B21H *1/14;* **B41F** *13/10*

U.S. Cl. 156—86 **10 Claims**



1. A method of assemblying a gravure printing cylinder, which comprises preparing a printing sleeve by electroforming, subjecting the printing sleeve temporarily to circumferential tensile stress, releasing the sleeve completely from the tensile stress, providing a core roll, applying a hotmelt adhesive in the molten state onto at least part of at least one of the surface of the core roll and the inner surface of the printing sleeve which has been subjected to, and released from, the tensile stress, and fitting thereafter the printing sleeve over the core roll while the hotmelt adhesive is in the molten state, the core roll and the printing sleeve being firmly bonded together upon solidification of the hotmelt adhesive to provide the gravure printing cylinder.

4. A method of assembling a gravure printing cylinder according to claim 1, wherein the printing sleeve has an inner diameter less than the diameter of the core roll at room temperature, and wherein the printing sleeve in being mounted on the core roll is heated to such a temperature that the inner diameter of the printing sleeve becomes at least approximately equal to the diameter of the core roll.

5. A method of assembling a gravure printing cylinder according to claim 1, wherein the printing sleeve is made of a material having a higher coefficient of thermal expansion than the material of which the core roll is made, wherein the printing sleeve has an inner diameter less than the outside diameter of the core roll at room temperature, and wherein, in mounting the printing sleeve on the core roll, both the printing sleeve and the core roll are heated to such a temperature that the inner diameter of the printing sleeve becomes at least approximately equal to the diameter of the core roll.

4,461,664

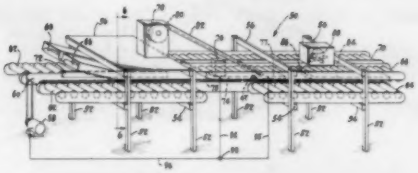
MANUFACTURING FIBERBOARD DUCTS

Mark J. Auer, 23520 Lake Rd., Bay Village, Ohio 44140

Filed Sep. 29, 1982, Ser. No. 428,147

Int. Cl.³ B31F *23/10*

U.S. Cl. 156—204 **6 Claims**



1. In a process for fabricating a flat fiberboard duct from a flat fiberboard comprising a plurality of linear sections, said linear sections comprising two intermediate sections and two outer end sections which terminate laterally with linear edges adapted to be secured together to form a linear seam, the first outer end section having a linear flap adjacent to the first outer end section linear edge and adapted to overlap the linear seam and be secured to the second outer end section adjacent to the second outer end section linear edge to form a folded fiberboard duct, the process steps comprising:

folding the fiberboard wherein the outer end sections fold onto the intermediate sections to provide a folded fiberboard duct having the distal linear edges of the outer end sections adjacently disposed to form a linear seam;

advancing the folded fiberboard duct and aligning the seam of the fiberboard duct with a centrally disposed linear guide means where each distal linear edge of the outer end sections engage the linear guide means to maintain the folded fiberboard duct in square alignment with the linear guide means;

collapsing the folded fiberboard duct between converging conveying means to form a flat fiberboard duct while maintaining the flat fiberboard duct in alignment with said linear guide means;

preheating the seam of the flat fiberboard duct while maintaining alignment with said linear guide means;

applying heat sensitive tape to the seam of said flat fiberboard duct while maintaining alignment with said linear guide means;

heating and pressing the heat sensitive tape to secure the tape whereby the tape secures the fiberboard flap to the second outer end section;

cooling the heated tape to set the tape while removing the flat fiberboard duct.

4,461,665

SHEET TYPE COMPOSITE MATERIAL AND METHOD AND APPARATUS FOR MANUFACTURING THE SAME

Manfred K. Schertler, Eulatalstrasse 31, 8858 Neuburg, Fed. Rep. of Germany

Filed Jul. 2, 1982, Ser. No. 394,494

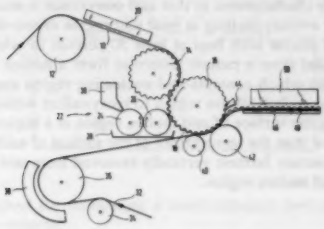
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1981, 3126948; Apr. 21, 1982, 3214821

Int. Cl.³ B32B *31/04, 31/14, 3/28*

U.S. Cl. 156—210 **7 Claims**

1. A process for making a sheet type composite material characterized by the steps of pulling a first sheet metal web from a first supply roll and profiling it between two interengaging profiling rolls at least one of which is heated, pulling a second flat sheet metal web from a second supply roll and continuously guiding it into contact with the profiled sheet metal web, gluing said two webs to one another while they are continuously brought into contact with one another by means of a hot melt material serving as a glue material, heating said first web in advance of its reaching said profiling rolls, heating

said second sheet metal web in advance of its being brought into contact with said profiled web, applying said glue to said profiled web prior to said first and second webs being brought into contact with one another, said step of binging said first and second webs into contact with one another being performed while the portion of the profiled web at which the contact takes place is still positioned on one of said profiling rolls, pressing said two sheet metal webs to one another as they are brought into contact with one another and thereafter cooling



them off, said steps of pressing and cooling off being performed while the involved portion of said profiled sheet metal web is positioned on said one of said profiling rolls, after said steps of pressing and cooling said two sheet metal webs continuously driving the now joined pair of webs over a flat supporting surface, applying glue to the free profiled crests of the profiled web, continuously driving a third heated flat sheet metal web and bringing it into contact with said free profiled crests and pressing it against said now joined pair of webs, and then cooling the so-formed three layered layup and cutting it to size.

4,461,666

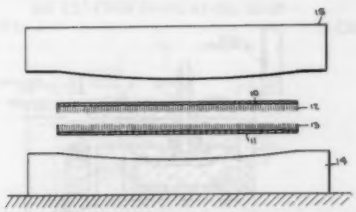
CONTOURED BALSA-CORE LAMINATE

Henri A. Kohn, Northvale, N.J., assignor to Baltek Corporation, Northvale, N.J.

Continuation-in-part of Ser. No. 148,690, May 12, 1980, Pat. No. 4,343,846. This application Oct. 16, 1980, Ser. No. 197,497

Int. Cl.³ B32B *31/20*

U.S. Cl. 156—222 **6 Claims**



1. A technique for producing a contoured sandwich laminate having a compound curvature and a core of predetermined thickness comprising the steps of:

A. bonding a liner of end-grain balsa core material having a substantially parallel array of fibers to one surface of a first facing sheet to create one ply whereby the fibers are anchored at one end only;

B. bonding a liner of end-grain balsa core material having a substantially parallel array of fibers to one surface of a second facing sheet to create another ply whereby the fibers are anchored at one end only;

C. coating at least one of the exposed surfaces of said liners with an uncured adhesive thereon to provide slip freedom;

D. superposing the two plies with their exposed surfaces in face-to-face relation; and

E. applying bending pressure to the superposed plies to cause the plies to assume the desired contour without disruption, for the fibers are free to move until such time as the adhesive is cured.

4,461,667

PACKING MATERIAL FOR ASEPTIC PACKAGES

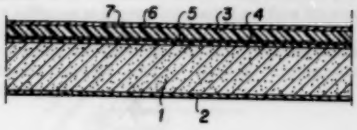
Herwig Pupp, Lund, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Division of Ser. No. 254,086, Apr. 14, 1981, Pat. No. 4,424,260. This application Sep. 19, 1983, Ser. No. 533,795

Claims priority, application Sweden, Apr. 16, 1980, 8002845

Int. Cl.³ B29C *19/00*

U.S. Cl. 156—244.11 **6 Claims**



1. A method for the manufacture of packing material by lamination of paper and plastics, comprising the steps of fixing the layers included in the laminate to one another with a binder, coating at least a side of the laminate which is intended to constitute the inside of the finished packages with a layer of polyethylene, coating the polyethylene layer of the said laminate with a thin plastic layer which covers the whole polyethylene layer surface, said thin plastic layer being applied by extrusion such that the contact zone between the polyethylene coating layer and the thin plastic layer remains sterile, the adhesion between the coating layer and the thin plastic layer remaining sufficiently low such that surface fusion of the polyethylene layer and the thin plastic layer does not occur, the layers being attached to one another in a separable, bacteria-tight manner.

4,461,668

DISPENSER FOR DISPENSING A LAMINATED WEB

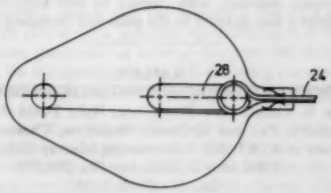
Peter Samuelsen, Rungsted Kyst, Denmark, assignor to Coloplast A/S, Espergaerde, Denmark

Filed Sep. 21, 1982, Ser. No. 420,765

Claims priority, application Denmark, Sep. 23, 1981, 4206/81

Int. Cl.³ B32B *31/04*

U.S. Cl. 156—543 **2 Claims**



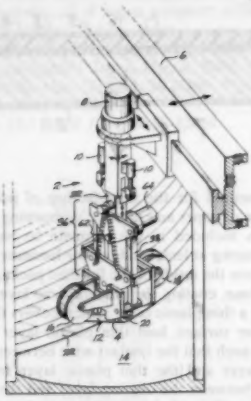
1. A dispenser comprising a housing; a first roll of a composite first web composed by a relatively thick flexible double-faced adhesive layer and a first relatively stiff protective sheet situated outermost in each winding of the roll, which first protective sheet is non-adhesive on at least its outermost surface; means affixed to said housing for holding said first roll; a second roll of a second web in the form of a second relatively stiff protective sheet; means affixed to said housing for holding said second roll; and outlet means forming an opening in the housing, through which the free ends of the first and second webs can be pulled together with the adhesive surface of the

first web adjacent to the second web, the first and second webs forming together a laminated web comprising the adhesive layer sandwiched between the first and second protective sheets, said outlet means being press means for pressing the first and second webs against each other during their passage through the outlet means so that they adhere to each other.

4,461,669
PIVOTAL MOUNT FOR LAMINATING HEAD

Helmut Dontscheff, Tacoma, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1983, Ser. No. 537,982
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—574 **15 Claims**



1. In a laminating machine of the type having a head with a presser member that presses a strip of material against a contoured surface to apply it to the surface along a path, apparatus for mounting the head for pivotal movement about the path, said apparatus comprising:

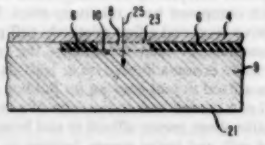
a support member spaced from the presser member and having a longitudinal axis that is aligned with a point located on the path; and

parallel linkage means pivotably connected to both the support member and the head for maintaining the longitudinal axis of said support member in alignment with said point and for allowing pivotal movement of the head and the presser member, with respect to said support member, about a line parallel to the path and including said point.

4,461,670
PROCESS FOR PRODUCING SILICON DEVICES

George K. Celler, New Providence, N.J.; David J. Lischner, Salisbury, Pa., and McDonald Robinson, Chester, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 3, 1982, Ser. No. 374,309
Int. Cl.³ C30B *1/08*
U.S. Cl. 156—603 **9 Claims**



1. A process for producing an active region of single crystal silicon overlying a region of dielectric material comprising the steps of:

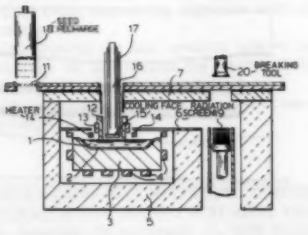
(1) forming a precursor structure that includes a region of non-single crystal silicon material which both overlies said region of dielectric material and which is in proximity to a nucleating region of single crystal silicon and

(2) converting said non-single crystal silicon region into said active region of single crystal silicon by employing said nucleating region of single crystal silicon as a nucleating site characterized in that said conversion is accomplished by entirely melting at least said region of non-single crystal silicon with heat at least 50 percent of which is provided from a radiant source to form a molten silicon region which contacts said nucleating region and allowing said molten silicon region to recrystallize while maintaining the surface of said molten region at a higher temperature than the temperature of the surface of said precursor structure furthest vertically removed from said surface of said molten region.

4,461,671
PROCESS FOR THE MANUFACTURE OF SEMICONDUCTOR WAFERS

Dieter Seifert, Neuötting; Erhard Sirtl, Marktl, and Cord Gessert, Burghausen, all of Fed. Rep. of Germany, assignors to Heliotronic Forschungs- und Entwicklungs Gesellschaft für Solarzellen-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Feb. 1, 1982, Ser. No. 344,370
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1981, 3107596
Int. Cl.³ C30B *19/00*
U.S. Cl. 156—607 **8 Claims**



1. A process for the manufacture of semiconductor wafers directly from molten semiconductor material, comprising the steps of:

(a) producing a bath of molten semiconductor material having a melt surface;

(b) seeding an area of the melt surface corresponding approximately to the size of the desired wafer by allowing at least one seed crystal to fall freely onto said melt surface;

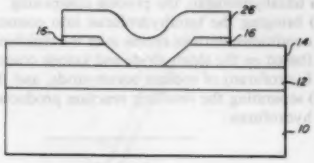
(c) allowing the area of the melt surface corresponding approximately to the size of the desired wafer to cool until it solidifies and floats freely on the melt surface, the cooling being brought about at least substantially by loss of heat by radiation; and

(d) removing the freely floating wafer from the melt surface.

4,461,672
PROCESS FOR ETCHING TAPERED VIAS IN SILICON DIOXIDE

Mary E. Musser, Dallas, Tex., assignor to Texas Instruments, Inc., Dallas, Tex.

Filed Nov. 18, 1982, Ser. No. 442,826
Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—644 **10 Claims**

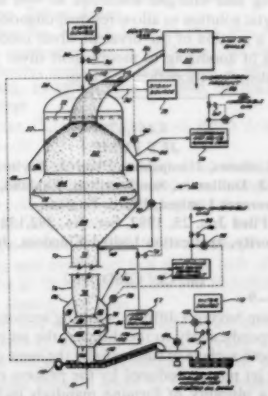


1. A method for fabricating a semiconductor device comprising the steps of:
- forming an insulating layer on a surface of a semiconductor body;
- depositing a semiconductor layer of a predetermined thickness on said insulating layer;
- selectively masking said semiconductor layer with an apertured resist;
- exposing said device to a selective etchant to form an opening in said semiconductor layer extending to the surface of said insulating layer; and
- exposing said device to a nonselective etchant for etching said semiconductor layer and said insulating layer at predetermined rates, whereby tapered apertures are formed in said insulating layer.

4,461,673
PROCESS FOR COOLING, DEPRESSURIZING, AND MOISTURIZING RETORTED OIL SHALE

Roland F. Deering, Brea, Calif.; Roland O. Dhondt, deceased, late of Long Beach, Calif. (by Ruth Dhondt, executor), and John E. Hines, Costa Mesa, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Jul. 22, 1982, Ser. No. 400,723
Int. Cl.³ C10B *39/04, 45/00, 53/06*
U.S. Cl. 201—1 **12 Claims**

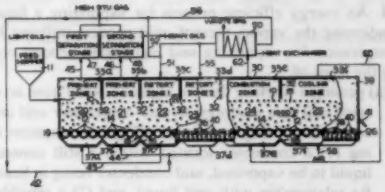


1. A process for cooling and depressurizing retorted oil shale particles produced from an oil shale retort operated at superatmospheric pressure, said process comprising:
(a) transferring said retorted oil shale particles from said retort to a selected location at a pressure less than the pressure within said retort by gravitating said retorted oil shale particles as a solids bed in series flow successively through a cooling chamber, a gas disengaging chamber, a stripping chamber and a seal leg chamber, the configuration of said seal leg chamber being selected to provide a substantial resistance to downwardly directed gas flow when said seal leg chamber is traversed by said gravitating particle bed;
(b) controllably contacting said oil shale particles within said cooling chamber with a selected quantity of liquid water so as to cool said particles, said quantity being selected such that substantially all of said water is vaporized to steam upon contact with said particles;
(c) selectively withdrawing gas from said gas disengaging chamber so as to maintain said cooling chamber at a pressure sufficient to prevent substantial gas flow between said cooling chamber and said retort; and
(d) contacting said gravitating oil shale particles, within said stripping chamber, with an upwardly flowing stream of stripping gas.

4,461,674
APPARATUS FOR RECOVERY OF DIFFERENT WEIGHT FRACTIONS OF OIL FROM SHALE

Bobby P. Faulkner, New Berlin, and Michael H. Weinecke, Franklin, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Division of Ser. No. 336,262, Dec. 31, 1981, Pat. No. 4,405,438. This application Sep. 22, 1982, Ser. No. 421,382
Int. Cl.³ C10B *1/06, 27/00, 49/06*
U.S. Cl. 202—85 **4 Claims**



1. Apparatus for recovery of oil from oil bearing shale particles (10) comprising:
a. transporting means (12) for moving a bed (15) of the particles (10) along a generally horizontal path of travel;
b. stationary gas-confining housing structure (30) above and below the transporting means (12) enclosing the transporting means (12) and the bed of particles transported thereon;
c. partitions (32) within the housing structure (30) and depending from a portion of the housing structure (30) above the transporting means (12) and dividing the housing structure (30) into a first retorting chamber (22) and second retorting chamber (23) spaced apart by one of the depending partitions (32);
d. a first retorting gas supply conduit (51) connected to the first retorting chamber (22) and a second retorting gas supply conduit (55) connected to the second retorting chamber (23) for directing first and second heated nonoxidizing gas streams free of products of combustion into the first and second retorting chambers (22, 23) and through the bed of particles for elevating the temperature of the particles to a light oil educting temperature in the first retorting chamber (22) and a heavy oil educting temperature in the second retorting chamber; and
e. a first oil-gas separator (47) communicating with the first

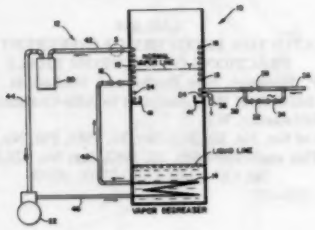
retorting chamber (22) and a second oil-gas separator (48) in communication with the second retorting chamber (23) for separating the light and heavy oils from their respective carrier gas streams and separately discharging the light oil, heavy oil and oil-free carrier gas.

4,461,675

ENERGY EFFICIENT PROCESS FOR VAPORIZING A LIQUID AND CONDENSING THE VAPORS THEREOF

Harry F. Osterman, Westfield, N.J., and George C. Nylen, Tonawanda, N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 220,883, Dec. 29, 1980, Pat. No. 4,357,212.
This application Apr. 26, 1982, Ser. No. 371,410
Int. Cl.³ B01D *3/42*
U.S. Cl. 203—24 7 Claims



1. An energy efficient process for vaporizing a liquid and condensing the vapors thereof, said process utilizing heat of compression for vaporizing said liquid, said process comprising the steps of:

(a) passing a working fluid in a gaseous state from an evaporator coil to a compressor, said evaporator coil and said compressor being in a closed refrigeration system including (1) a condenser located within a still containing a liquid to be vaporized, said condenser being in heat-transfer relationship with said liquid, and (2) a sensible heat-conveying line connecting said condenser to said evaporator coil;

(b) compressing the gaseous working fluid to a high pressure and adding heat of compression thereto;

(c) passing the high pressure gaseous fluid containing said heat of compression to said condenser whereby heat including said heat of compression is transferred from said high pressure gaseous fluid to said liquid, as a result of which said liquid is vaporized and the resulting working fluid contains sensible heat;

(d) passing the said resulting working fluid by said sensible heat-conveying line to said evaporator coil whereby the working fluid entering said evaporator coil contains said sensible heat; and

(e) recovering substantially all sensible heat from said compressor over that used to boil-up said liquid, so as to maintain thermal balance of said apparatus, by removing directly from the vapors resulting from vaporization of said liquid, heat in excess of that necessary to maintain thermal balance in said apparatus, removal being by heat transfer contact between said vapors and at least one auxiliary condensing coil; said at least one auxiliary condensing coil being separate from said closed refrigeration system, and being situated between said condenser and said evaporator coil whereby the excess heat is removed prior to said vapors contacting and condensing upon said evaporator coil.

4,461,676

PROCESS FOR REFINING TETRAHYDROFURAN

Thomas W. Del Pesco, and Richard H. Goldbaum, both of Wilmington, Del., assignors to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Filed Jul. 1, 1982, Ser. No. 394,119
Int. Cl.³ B01D *3/34;* C07D *307/08*
U.S. Cl. 203—29 3 Claims

1. A process for removing aldehyde and ketone impurities from tetrahydrofuran, the process comprising

(a) bringing the tetrahydrofuran into contact, under basic conditions, with an excess over the stoichiometric amount (based on the aldehydride and ketone content of the tetrahydrofuran) of sodium borohydride; and then

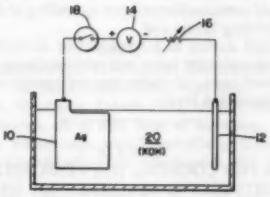
(b) separating the resulting reaction products and the tetrahydrofuran.

4,461,677

PROCESS FOR CHARGING SILVER ELECTRODES TO MONOXIDE LEVEL

Theodore Katan, Mountain View, and Pamela J. Carlen, Ben Lomond, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 5, 1983, Ser. No. 510,809
Int. Cl.³ H01M *10/44*
U.S. Cl. 204—2.1 5 Claims



1. A method for making silver-oxide electrodes which comprises:

(a) anodizing an electrode structure of porous silver in an aqueous electrolytic solution until said electrode is charged to the peroxide level;

(b) removing the anodizing current; and

(c) allowing said charged electrode to wet stand in said electrolytic solution to allow residual unanodized silver to convert a portion of the divalent silver oxide formed by said step of anodizing to monovalent silver oxide by reverse a disproportionation reaction.

4,461,678

JET PUMP

Robert B. Matthews, Hampshire; Peter J. Taylor, Hampshire, and Keith J. Dallimore, Southampton, England, assignors to Plessey Overseas Limited, Ilford, England

Filed Jun. 25, 1982, Ser. No. 392,132
Claims priority, application United Kingdom, Jun. 26, 1981, 8119774
Int. Cl.³ C25D *1/02*
U.S. Cl. 204—9 6 Claims

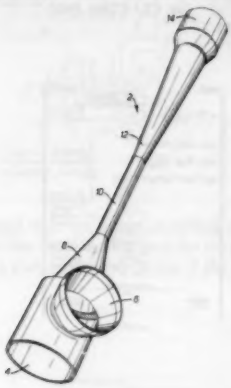
1. A jet pump having a diffuser, a mixing section, and an inlet arranged perpendicularly to the diffuser, the jet pump having an inner, smooth surface of substantially the same quality as the mandrel, the jet pump produced by the process comprising:

providing a plurality of forming mandrels including a diffuser and mixing section mandrel having a first axis and an inlet mandrel having a second axis, said mandrels defining the interior surface of said jet pump, at least one of said mandrels adapted for releasable attachment to the other of said mandrels;

interconnecting said mandrels to define a mandrel assembly,

said inlet mandrel attached to said diffuser and mixing section mandrel, said second axis extending transversely relative to said first axis;

depositing metal to a desired thickness on said mandrel assembly by electrodeposition to provide a substantially even metallic coating defining a jet pump body having a



hollow diffuser and mixing section and a hollow, integral inlet section having its axis transverse to the axis of the diffuser and mixing section; and

disconnecting said mandrels from each other; and

removing said mandrels from the jet pump body for subsequent re-use, whereby a jet pump having a smooth inner surface is provided.

4,461,679

METHOD OF MAKING STEEL SHEET PLATED WITH PB-SN ALLOY FOR AUTOMOTIVE FUEL TANK

Seizun Higuchi; Minoru Kamada, both of Kitakyushu; Kazuhiro Tano, Nakama; Tetsuo Fushino, Kitakyushu, and Minoru Fujinaga, Fukuoka, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Division of Ser. No. 245,973, Mar. 20, 1981, Pat. No. 4,413,039. This application Jan. 7, 1983, Ser. No. 456,434

Claims priority, application Japan, Oct. 2, 1979, 54-135901; Mar. 22, 1980, 55-35762; Aug. 8, 1980, 55-108362; Aug. 25, 1980, 55-115967

Int. Cl.³ C25D *5/10, 5/50;* B05D *1/18*

U.S. Cl. 204—27 **2 Claims**

1. A method of producing a steel sheet plated with a Pb-Sn alloy, suitable for use as the material for automobile fuel tanks adapted to receive alcohol-containing fuel therein, said method comprising the steps of:

(1) plating a steel sheet with Ni to a thickness of 0.01 to 1μ;

(2) dipping said steel sheet in a plating bath of a Pb-Sn system alloy at 320° to 400° C. for 1 to 10 seconds to effect a hot dip plating; and then

(3) cooling said steel sheet rapidly down to a temperature below 300° C. within 3 seconds, thereby forming a first layer of Ni-Sn alloy consisting only of stoichiometric NiSn phase brought about by both the reaction between said plated Ni and said plated Pb-Sn alloy and said cooling, a second layer of plated Pb-Sn alloy formed on said NiSn phase alloy, and optionally a Ni backing layer formed on said steel sheet, the total of both said Ni-Sn layer and said Ni backing layer, when present, being 0.035 to 1 micron in thickness.

4,461,680

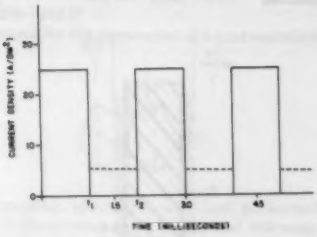
PROCESS AND BATH FOR ELECTROPLATING NICKEL-CHROMIUM ALLOYS

David S. Lashmore, Frederick, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Dec. 30, 1983, Ser. No. 567,451

Int. Cl.³ C25D *3/56, 5/14*

U.S. Cl. 204—41 **16 Claims**



1. A process for the electrodeposition of a nickel-chromium alloy on a cathodic substrate, comprising:

contacting the substrate with an aqueous electrolyte containing: about 50–125 g/l of $CrCl_3.6H_2O$; about 10–125 g/l of $NiCl_2.6H_2O$; about 10–115 g/l1 of formic acid; about 25–50 g/l of boric acid; and about 50–100 g/l of sodium citrate dihydrate;

adjusting the pH of the bath to about 1–5 and the temperature to about 20°–60° C.; and

passing a sufficient current through the solution and to the substrate to effect deposition thereon of a nickel-chromium alloy.

8. The process of claim 1, wherein said current is a pulsed current.

4,461,681

PROCESS FOR THE PREPARATION OF SQUARIC ACID BY THE ELECTROLYSIS OF CARBON MONOXIDE IN ANHYDROUS ALIPHATIC NITRILE SOLVENT MEDIA

James J. Barber, Montvale, N.J., assignor to The Halcon SD Group, Inc., New York, N.Y.

Filed May 31, 1983, Ser. No. 499,575

Int. Cl.³ C07B *29/06*

U.S. Cl. 204—59 R **19 Claims**

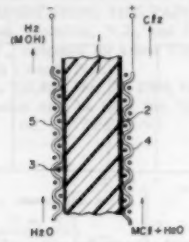
1. In a method for preparing squaric acid, its complexes and/or salts, the method comprising passing an electrical current through a solution of carbon monoxide maintained at a temperature ranging from the freezing point up to the boiling point of the particular solvent present, the solution further maintained at pressures ranging from atmospheric up to about 420 atmospheres, wherein the electrolytic cathodic reductive cyclotetramerization of carbon monoxide is undertaken, the reaction being carried out under conditions of substantial separation or non-interference of the anodic reactions and reaction products from the cathodic reactions and reaction products, wherein the improvement comprises the usage of an anhydrous aliphatic nitrile solvent containing from 3 to 8 carbon atoms, the formed squarate being particularly adaptable to efficient separation methods.

4,461,682

ION EXCHANGE MEMBRANE CELL AND ELECTROLYTIC PROCESS USING THEREOF

Yoshio Oda; Takeshi Morimoto, and Toshiya Matsubara, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 288,684, Jul. 31, 1981, abandoned. This application Jun. 22, 1983, Ser. No. 505,900
Claims priority, application Japan, Jul. 31, 1980, 55-104284
Int. Cl.³ C25B *1/46, 13/02, 13/08*
U.S. Cl. 204—98 10 Claims



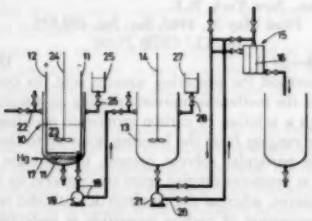
1. An electrolytic cell which comprises:
an anode and a cathode which are partitioned by an ion exchange membrane having both surfaces roughened, said surface roughening being defined by a fine concavo-convex structure wherein the average depth (heighth) of said structure ranges from 0.01 to 30μ with the average number of surface roughening concavo-convex structures ranging from 1 to 10^{13} per mm^2, and wherein said anode contacts one of said membrane roughened surfaces and said cathode contacts the opposing membrane roughened surface.

4,461,683

METHOD FOR SEPARATING IODINE IN SOLID FORM, FROM AN ACID MERCURY SALT SOLUTION

Ludo P. M. Geens; Walter R. A. Goossens, and Jan J. J. L. Van Dooren, all of Mol, Belgium, assignors to Studiecentrum voor Kernenergie, "S.C.K", Brussels, Belgium

Filed Nov. 13, 1981, Ser. No. 321,147
Claims priority, application Belgium, Apr. 27, 1980, 204615
Int. Cl.³ C25C *1/22*
U.S. Cl. 204—105 R 10 Claims



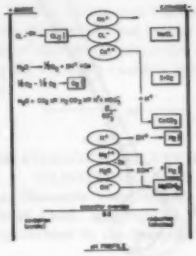
1. A method for separating iodine in solid form from a mercury nitrate solution, which comprises subjecting the iodine-containing mercury salt solution, with a pH value between 2 and 8, to an electrolysis (1) for separating the mercury, and thereafter precipitating (2) from the resulting, substantially mercury-free solution, the iodine in the form of a salt.

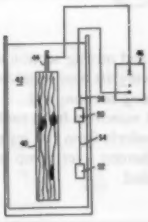
4,461,684

ACCRETION COATING AND MINERALIZATION OF MATERIALS FOR PROTECTION AGAINST BIODEGRADATION

Wolf H. Hilbertz, Austin, Tex., assignor to The Marine Resources Company, Austin, Tex.

Filed Feb. 13, 1981, Ser. No. 234,325
Int. Cl.³ C25B *1/00*
U.S. Cl. 204—132 7 Claims





1. A method of treating organic fibrous material to inhibit biodegradation, which comprises the steps of:
inserting an electrically conductive element into a body of organic fibrous material;
disposing the body of fibrous material in a volume of electrolyte;
disposing an anode in the electrolyte in proximity to the body of fibrous material;
connecting said anode to the positive potential terminal of a direct current electrical power supply;
connecting said electrically conductive element in said fibrous material to the negative potential terminal of said direct current electrical power supply, thereby making said element a cathode; and
establishing a direct electrical current between the cathode and the anode for a time sufficient for accreting a solid coating of high strength electrodeposited minerals material on the surfaces of said body of fibrous material.

4,461,685

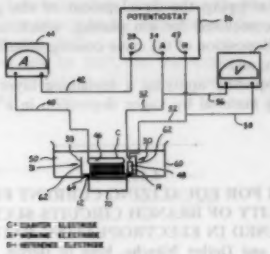
METHOD FOR PRODUCING ACICULAR IRON OR IRON ALLOY PARTICLES

Michael J. Pryor, New Haven, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed May 27, 1983, Ser. No. 498,615
Int. Cl.³ C25F *5/00*
U.S. Cl. 204—146 26 Claims

1. A method of producing iron or iron alloy particles, comprising the steps of:
providing a copper or copper alloy strip having distributed therein fine particles of iron or iron alloy; and
selectively dissolving said copper or copper alloy strip without substantial dissolving of said iron or iron alloy parti-

cles to recover said particles, said step of dissolving including immersing said metal strip in an electrolytic solu-



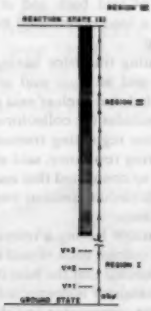
tion selected from the group consisting of alkaline metal sulfates so that the iron alloy particles are passivated while permitting electrolytic dissolution of the alloy strip.

4,461,686

SEQUENTIAL MULTIPHOTON EXCITATION METHOD

Sam A. Tuccio, Cupertino, Calif., and Donald F. Heller, Convent Station, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 3, 1981, Ser. No. 327,148
Int. Cl.³ B01D 59/00
U.S. Cl. 204—157.1 R **10 Claims**



1. A multiphoton excitation method comprising the sequential steps of:

(a) exposing a gaseous material comprising polyatomic molecules to infrared laser radiation of a first predetermined wavelength to excite the polyatomic molecules to excited vibrational states of the ground electronic state and

(b) after a time delay that is shorter than the vibrational but longer than the rotational relaxation time of the polyatomic molecule, exposing the material to infrared laser radiation of a second predetermined wavelength to further excite the molecules to produce a state at which the excited molecules undergo a chemical reaction.

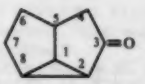
4,461,687

PROCESSES FOR THE PREPARATION OF PURE ENANTIOMERS OF BICYCLO(2,2,2)OCT-5-EN-2-ONES

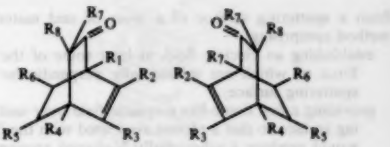
Martin Demuth, and Kurt Schaffner, both of Mulheim am Ruhr, Fed. Rep. of Germany, assignors to Studiengesellschaft Kohle MBH, Mulheim am Ruhr, Fed. Rep. of Germany

Division of Ser. No. 326,644, Dec. 2, 1981, Pat. No. 4,415,756. This application Jul. 26, 1982, Ser. No. 401,462
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1980, 3046106
Int. Cl.³ B01J 19/12
U.S. Cl. 204—158 R **6 Claims**

1. A process for the preparation of a pure enantiomers of the formula



which comprises effecting a sensitized photoreaction of a bicyclo[2.2.2]oct-5-en-2-one of one of the following formula, said one being in the form of a pure enantiomer:



wherein

R_1, R_2, R_3, R_4, R_5 and R_6 may be H, C_1–C_8-alkyl, C_1–C_8-alkoxyl and hydroxylated and/or carbonylated C_1–C_8-alkyl groups which may contain one or more double bonds and/or triple bonds, and may also be Cl, Br. F and CN as well as COOH and/or esters thereof and

(wherein R may be H, C_1–C_8-alkyl, C_1–C_8-alkoxyl and a hydroxylated and/or carbonylated C_1–C_8-alkyl group which may contain one or more double bonds and/or triple bonds and, moreover, the carbonyl group may be acetalized or ketalized) and

R_7 and R_8 may be H, C_1–C_8-alkyl, C_1–C_8-alkoxyl and hydrolylated and/or carbonylated C_1–C_8-alkyl groups which may contain one or more double bonds and/or triple bonds.

4,461,688

MAGNETICALLY ENHANCED SPUTTERING DEVICE HAVING A PLURALITY OF MAGNETIC FIELD SOURCES INCLUDING IMPROVED PLASMA TRAPPING DEVICE AND METHOD

Charles F. Morrison, Jr., Boulder, Colo., assignor to Vac-Tec Systems, Inc., Boulder, Colo.

Filed Jun. 23, 1980, Ser. No. 161,885
Int. Cl.³ C23C 15/00
U.S. Cl. 204—192 R **12 Claims**

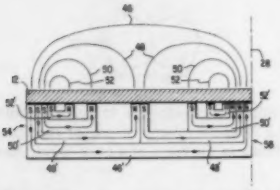
1. A magnetically enhanced sputtering device for coating a substrate with material sputtered from a sputtering surface of a layer of said material, said sputtering device comprising:

means for establishing an electric field, at least some of the lines of force of which are substantially perpendicular to said sputtering surface;

a first magnetic field source for providing a first dome-like magnetic field over said sputtering surface so that a plasma associated with the first field would produce a substantially V-shaped erosion pattern from the layer if only the first field were over the sputtering surface; and

at least one further magnetic field source for providing a further dome-like magnetic field within said first dome-like magnetic field for modifying said V-shaped erosion pattern where each of said first and further magnetic field sources is capable of sustaining a sputtering electrical discharge in the absence of the other magnetic field sources to thereby enhance the uniformity of sputtering of the layer.

8. A method for coating a substrate with material sputtered



from a sputtering surface of a layer of said material, said method comprising:

establishing an electric field, at least some of the lines of force of which are substantially perpendicular to said sputtering surface;

providing a first dome-like magnetic field over said sputtering surface so that a plasma associated with the first field would produce a substantially V-shaped erosion pattern from the layer if only the first field were over the sputtering surface; and

providing a further dome-like magnetic field within first dome-like magnetic field for modifying said V-shaped erosion pattern where each of said first and further magnetic fields is capable of sustaining a sputtering electrical discharge in the absence of the other magnetic fields.

4,461,689

METHOD AND APPARATUS FOR COATING A GRAPHITE MEMBER

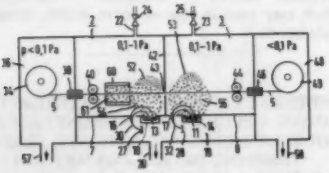
Heinrich Diepers, Höchstadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 20, 1978, Ser. No. 917,383

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1977, 2727683; Dec. 22, 1977, 2757374

Int. Cl.³ C23C *15/00*; H01R *39/20*

U.S. Cl. 204—192 N **6 Claims**



1. In a method of coating felts or mats of short graphite fibers for brushes in electric machines with thin layers of electrically highly conductive coating material from the vapor phase, the improvement comprising continuously pulling said felts or mats through etching and coating apparatus wherein said felts or mats are coated by steps comprising:

(a) first subjecting the felts or mats to an etching treatment prior to the coating process by subjecting the felts or mats to a bombardment with ions of an inert gas;

(b) then, without interruption, preparing a boundary layer of the coating material on the graphite member by ion plating, said ion plating comprising vapor deposition in the presence of a gas discharge plasma;

(c) then stopping the development of the gas discharge plasma, required for ion plating, which continuing the vapor deposition of the same coating material on the felts or mats; and

(d) subsequently applying a remaining layer of the same coating material by vapor deposition in a high vacuum alone.

4,461,690

SYSTEM FOR EQUALIZING CURRENT FLOW IN A PLURALITY OF BRANCH CIRCUITS SUCH AS ARE USED IN ELECTROPLATING BATHS

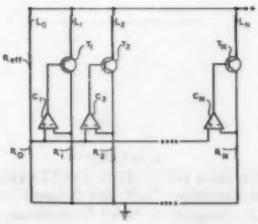
Rolf Roiff, and Detlev Nitsche, both of Berlin, Fed. Rep. of Germany, assignors to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation of Ser. No. 216,608, Dec. 12, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 432,393

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951708

Int. Cl.³ C25D *3/00*

U.S. Cl. 204—228 **9 Claims**



1. A system for equalizing DC current flow in a plurality of parallel branch circuits of an electroplating bath, wherein said plurality contains a reference branch circuit with a load constituted by a portion of said bath and at least one regulated branch circuit with a load constituted by another portion of said bath, comprising:

at least one regulating transistor having a base, a collector-emitter circuit, and an R_{eff}, said at least one transistor being so connected that each of said at least one regulated branch circuit includes the collector-emitter circuit of one of said at least one regulating transistor;

at least one measuring resistance, said at least one measuring resistance being so connected that each of said at least one regulated branch circuit contains one of said at least one measuring resistance;

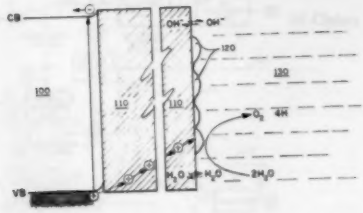
at least one comparator having a reference input, a measuring input and an output, each of said at least one comparator being so connected that the base of each of said at least one regulating transistor is connected to the output of one of said at least one comparator and the measuring input of each of said at least one comparator is connected to an end of one measuring resistance, whereby each of said at least one measuring resistance is associated with a unique comparator connected thereto and a unique regulating transistor connected thereto, with the unique comparator and the unique regulating transistor being connected together, said at least one comparator being so connected that the reference input thereof is connected to a first common point; and

a voltage divider placed in series with the reference branch circuit, the voltage divider including a first reference resistance having a resistance value equal to R_{eff} and further including a reference tap which is connected to said first common point.

4,461,691
ORGANIC CONDUCTIVE FILMS FOR SEMICONDUCTOR ELECTRODES

Arthur J. Frank, Lakewood, Colo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 10, 1983, Ser. No. 465,418
Int. Cl.³ C25B *11/04, 11/06, 5/00;* **H01M** *6/36*
U.S. Cl. 204—242 **20 Claims**



9. A photoelectrochemical cell for generating fuels and useful chemicals, said photoelectrochemical cell comprising:

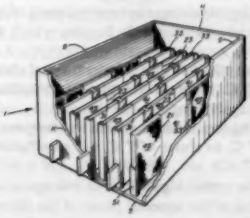
(a) at least one photoelectrode and an electrolyte containing at least two redox couples wherein said photoelectrode comprises a semiconductor overcoated with a conductive film capable of transporting electrons and holes and comprising a charge conductive polymer for substantially preventing photogenerated holes and electrons from reacting with said photoelectrode; and

(b) a redox enhancer for catalyzing certain chemical reactions required to generate said fuels and useful chemicals and for substantially preventing said photogenerated holes and electrodes from reacting with said conductive polymer, said redox enhancer being incorporated within or attached to the surface of said conductive polymer, said redox enhancer being selected from a group consisting of catalysts for said redox couples and charge-relaying agents.

4,461,692
ELECTROLYTIC CELL

Carl W. Raetzsch, Jr., Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 26, 1982, Ser. No. 382,022
Int. Cl.³ C25B *9/00, 11/02*
U.S. Cl. 204—268 **4 Claims**

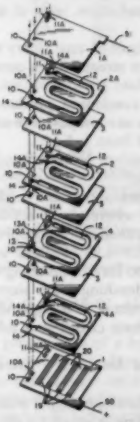


1. In an electrolytic cell having a plurality of base-to-base, vertical bipolar electrodes, each of said bipolar electrodes comprising a single metal blade having an anodic portion and a cathodic portion, and being bipolar electrodes arrayed in side-by-side configuration in a cell box whereby the anode of an internal bipolar electrode faces the cathodes of adjacent bipolar electrodes within the same electrolyte and the cathode of an internal bipolar electrode faces the anodes of adjacent bipolar electrodes within the same electrolyte, and whereby one surface of the anode of an external bipolar electrode faces one cathode of an adjacent bipolar electrode and the opposite surface thereof faces a wall of the cell box, and one surface of the cathode of an external bipolar electrode faces one anode of an adjacent bipolar electrode and the opposite surface thereof faces a vertical wall of the cell box, the improvement wherein the cathodes are fabricated of titanium, the internal cathodes being imperforate and the external cathodes being perforate.

4,461,693
POLARITY REVERSAL ELECTRODES

Surendar M. Jain, Watertown, Mass., assignor to Ionics Incorporated, Watertown, Mass.

Filed Jul. 6, 1982, Ser. No. 395,756
Int. Cl.³ B01D *13/02*
U.S. Cl. 204—301 **11 Claims**



1. An electrodialysis stack comprising ion-permeable membranes spaced from each other to form fluid treatment chambers with a polarity reversing electrode unit positioned at each terminal end of said stack, each electrode unit comprising an anode portion and a cathode portion electrically separated from each other, means for supplying current to the electrode units with switching means for connecting the anode portion of said first electrode to the positive pole of said current supply means while disconnecting the cathode portion thereof, and means for connecting the cathode portion of said second electrode to the negative pole of said current supply means while disconnecting the anode portion thereof, further means for connecting the active anode of said first electrode unit to the inactive anode of said second electrode unit and means to maintain a trickle of positive current to said inactive anode which is substantially less than the current to said active anode, and in the other position of said switch means, the anode portion of said first unit is made passive by being disconnected and the cathode portion being made cathodically active by connection to the negative pole of said current supply means and connecting the anode portion of said second electrode unit to the positive pole of said current supply means while disconnecting the cathode portion, with further means for connecting the active anode of said second electrode unit to supply and maintain a trickle of positive current to said inactive or passive anode portion of said first electrode unit, which current is substantially less than the current to said active anode.

4,461,694

COAL LIQUEFACTION PROCESS WITH ENHANCED PROCESS SOLVENT

Edwin N. Givens, Bethlehem, and Dohee Kang, Macungie, both of Pa., assignors to International Coal Refining Company, Allentown, Pa.

Filed Dec. 1, 1982, Ser. No. 445,798
Int. Cl.³ C10G *1/00*
U.S. Cl. 208—8 LE **4 Claims**

1. In an improved coal liquefaction process comprising steps of:

(a) forming in a slurry preparation zone, a slurry of finely divided coal and a pasting oil comprising a solvent for said coal,

(b) pressurizing said slurry to between about 500°–3200 psig,

(c) contacting said slurry with hydrogen-rich gas to form a gas/slurry mixture,

(d) heating said gas/slurry mixture in the presence of said hydrogen-rich gas to a temperature between about 600°–800° F.,

(e) permitting the heated gas/slurry mixture to react and to dissolve at least some of said coal,

(f) adding fresh hydrogen as required to form a liquified coal slurry in a liquefaction zone at a temperature of about 800–900° F.,

(g) passing said liquified coal slurry to a separator in which a vapor product stream and a condensed product stream are separated,

(h) passing said condensed product stream to a vacuum distillation zone at a temperature of from 500°–700° F. and at a pressure of from 1–5 psia,

(i) removing a residual bottoms product from said vacuum distillation zone,

(j) passing said residual bottoms product to a critical solvent deashing stage wherein said residual bottoms product is mixed with a critical deashing solvent at a temperature of from about 450°–630° F. and a pressure from about 750–1000 psig to form a deashing stage slurry,

(k) passing said deashing stage slurry into a first deashing separator wherein a first light upper phase and a first heavy lower phase comprising ash concentrate are separated,

(l) removing said first heavy lower phasefrom said first separator,

(m) passing said first light upper phase to a second deashing separator wherein a second light upper phase, substantially comprised of critical deashing solvent and a light fraction of solvent refined coal, and a second heavy lower phase, substantially comprised of a heavy fraction of solvent refined coal, are separated, and

(n) passing said second upper light phase to a third deashing separator for separation of a third light upper phase comprising critical deashing solvent and a third heavy lower phase comprising a light fraction of solvent refined coal; the improvement which comprises passing at least a portion of said second heavy lower phase to said slurry preparation zone, and combining said portion of said second heavy lower phase with said finely divided coal and said solvent in said slurry preparation zone, whereby said temperature in said liquefaction zone may be reduced by about 20°–40° F., with improved yields of pentane soluble oils being obtained.

4,461,695

SOLVENT EXTRACTION OF DIATOMITE

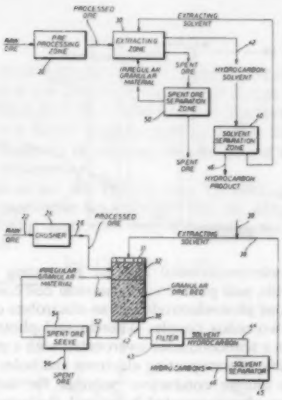
William Williams, College Station, Tex., assignor to Getty Oil Company, Houston, Tex.

Filed Mar. 28, 1983, Ser. No. 479,688
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—8 LE **12 Claims**

1. A method of extracting hydrocarbons from a diatomite ore comprising the steps of:

reducing the particle size of the ore to from a processed ore;

mixing a substantially irregular granular material with the processed ore to form an unstratified ore mixture having increased permeability, said granular material being substantially insoluble in an extracting solvent, and said granular material containing substantially no natural hydrocarbon deposits just prior to mixing with the processed ore, said granular material having a shape and size range sufficient to avoid packing of the processed ore as would substantially impair the permeation of said extracting



solvent capable of dissolving hydrocarbons from the ore through the unstratified ore mixture while not allowing any fines in the processed ore to form one or more stratified layers of fines sufficient to substantially impair penetration of the extracting solvent through one or more of the layers; and

permeating the unstratified ore mixture with the extracting solvent capable of dissolving hydrocarbons from the ore to form a hydrocarbon-solvent stream.

4,461,696

SHALE-OIL RECOVERY PROCESS

Jan Bock, Bridgewater; Patrick P. McCall, Matawan; Max L. Robbins, South Orange, and Michael Siskin, Livingston, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Apr. 25, 1983, Ser. No. 488,172
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—11 LE **15 Claims**

1. A method for obtaining high conversions of organic material in oil-shale to predominately liquids, which method comprises:

(a) heating the oil-shale to a temperature of about 360° C. to about 475° C. wherein volatiles are simultaneously collected during heating;

(b) maintaining the oil-shale within the temperature range of about 360° C. to about 475° C. for an effective amount of time;

(c) cooling the remaining residue to a temperature below the boiling point of the aqueous phase of the microemulsion of step (d) below;

(d) extracting the remaining residue with a microemulsion, or a coarse emulsion containing a microemulsion, which is capable of extracting the organic material of the residue, wherein the microemulsion is comprised of:

(i) about 0.3 to about 98 wt.% of an extracting agent capable of extracting organic material from the heat treated oil-shale;

(ii) about 1 to about 99 wt.% of water containing up to about 25 wt.% dissolved inorganic salts, and

(iii) about 0.2 to about 20 wt.% of at least one surfactant

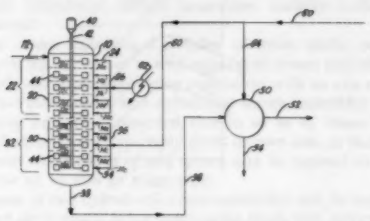
capable of forming a microemulsion; wherein an inert atmosphere is maintained throughout the process.

4,461,697

SLACK WAX DE-OILING PROCESS

Theodore H. West, Sarnia, Canada, assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Sep. 22, 1982, Ser. No. 421,247
Int. Cl.³ C10G 73/06
U.S. Cl. 208—31 **16 Claims**



1. A method for separating a crystallizable component from a non-crystallizable component in a multi-component feed stream, said method comprising:

A. passing the feed stream into a first mixing zone and adding solvent selectively miscible with the non-crystallizable component to the first mixing zone at a temperature below the temperature of the feed entering the first mixing zone to thereby crystallize at least a portion of the crystallizable component and form a slurry;

B. passing slurry from the first mixing zone to a second mixing zone wherein the slurry is contacted with additional solvent, the temperature of the solvent added to the second mixing zone being not less than the temperature of the slurry entering the second mixing zone to thereby remove quantities of the non-crystallized component from the crystallized component; and

C. passing slurry from the second mixing zone directly into a separation zone wherein crystallized component is separated from non-crystallized component and solvent.

4,461,698

SOLVENT DEWAXING WAXY HYDROCARBON DISTILLATE OILS USING A COMBINATION WAX-NAPHTHALENE CONDENSATE AND POLY-DIALKYLFUMARATE/VINYL ACETATE COPOLYMER DEWAXING AID

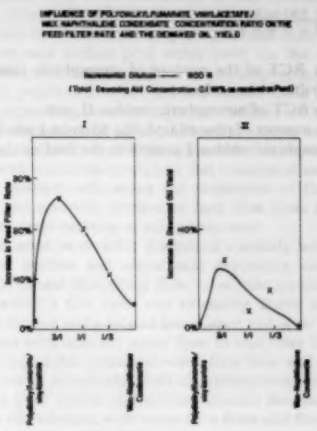
Cedric L. Briens, Richmond, and Bruce M. Sankey, Sarnia, both of Canada, assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Sep. 29, 1982, Ser. No. 426,713
Int. Cl.³ L10G 73/04
U.S. Cl. 208—33 **7 Claims**

1. A solvent dewaxing process comprising mixing a waxy hydrocarbon oil distillate with dewaxing solvent and a dewaxing aid, wherein said dewaxing aid comprises a mixture of:

A. a poly-dialkylfumarate/vinyl acetate copolymer having pendent alkyl side chain groups containing from 16 to 30 carbons in length with an average pendent side chain length of predominantly (>50%) C_{22}; and

B. a wax-naphthalene condensation production, wherein components (A) and (B) constituting the dewaxing aid are used in a weight ratio to each other ranging from about 1/10 to 20/1 of (A)/(B), and chilling said oil/dewaxing solvent/dewaxing aid mixture to form a slurry comprising solid particles of wax and a solution of dewaxed oil and



dewaxing solvent and separating said wax from said dewaxed oil solution.

4,461,699

PROCESS FOR REDUCING RAMSBOTTOM CARBON TEST OF SHORT RESIDUES

Jacobus Ellers, and Willem H. J. Stork, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 24, 1982, Ser. No. 391,811
Claims priority, application Netherlands, Sep. 21, 1981, 8104326
Int. Cl.³ C10G 45/00, 47/02, 47/04, 3/08
U.S. Cl. 208—89 **10 Claims**

1. A process for the preparation of a hydrocarbon mixture having an RCT of (a) %w and an initial boiling point of T_1° C., wherein a mixture of an atmospheric residue I obtained in the distillation of a crude mineral oil, which atmospheric residue has an RCT of (b) %w and boils below 520° C. to an extent of (f) %w, and an asphaltic bitumen I separated in the solvent deasphalting of a residue obtained in the distillation of a hydrotreated residual fraction of a crude mineral oil, which asphaltic bitumen has an RCT of (c) %w, which mixture comprises less than 50 pbw of asphaltic bitumen I per 100 pbw of atmospheric residue I, is subjected to a catalytic hydrotreatment in order to reduce the RCT; the product obtained is separated by distillation into an atmospheric distillate and an atmospheric residue II having an initial boiling point of T_1° C.; either so much asphaltic bitumen is separated from atmospheric residue II by solvent deasphalting that a deasphalted atmospheric residue having the desired RCT of (a) %w is obtained, or the atmospheric residue II is separated by distillation into a vacuum distillate and a vacuum residue, from which vacuum residue so much asphaltic bitumen is separated by solvent deasphalting that a deasphalted vacuum residue is obtained having an RCT which is such that, when this deasphalted vacuum residue is mixed with the vacuum distillate, a mixture having the desired RCT of (a) %w is obtained; and the catalytic hydrotreatment is carried out under such conditions as to satisfy the relation:

$$RCT\ \text{reduction} = \frac{d-e}{d} \times 100 = 100 - \frac{p^{1.8} \times (91 - 0.9 \times f - 2.55 \times b) + (1-p)(118 - 1.18 \times f)}{(1.426 - 1.15 \times 10^{-3} \times T_1 + 1.25 \times 10^{-3} \times r)(1 - 0.01 \times f)} \pm 5 \times \frac{100 \times r}{100},$$

-continued

where

$$P = \frac{100 \times b}{100 \times b + r \times c}$$

d = the RCT of the mixture of atmospheric residue I and asphaltic bitumen I,

e = the RCT of atmospheric residue II, and

r = the number of pbw of asphaltic bitumen I per 100 pbw of atmospheric residue I present in the feed mixture.

4,461,700

ROTARY FEEDER

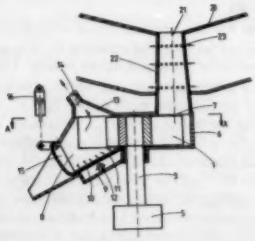
Seppo Lahtinen, Pori, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Feb. 3, 1982, Ser. No. 345,215

Claims priority, application Finland, Feb. 24, 1981, 810549

Int. Cl.³ B07B 4/00

U.S. Cl. 209—136 **5 Claims**



1. A rotary feeder for separating coarse material from finely divided material produced in a fluidized bed reactor, discharging the coarse material and recirculating the finely divided material to the reactor, which comprises a rotor having a housing, an inlet for the material being fed into the rotor and a downwardly inclined conduit for the discharge of the coarse material from the reactor, valve means for opening and closing the conduit, the housing having a cover plate at one end and an inclined bottom plate having at its end an outlet for the coarse material, a part of said bottom plate having first orifices, an inlet for air in communication with said first orifices, an outlet for air in said cover plate, the rotor having axial blades between which pockets are formed, which pockets communicate alternately with said inlet and said outlet for the material, as the rotor rotates, drive means for rotating the rotor, a portion of said cover plate having second orifices for the introduction of air and for the separation of fine material, and a second outlet for air whereby air is introduced into a pocket formed between the axial blades when said pocket during rotation of the rotor has moved over the inlet of the material.

4,461,701

PROCESS FOR RUTILE FLOTATION BY MEANS OF N-BENZOYL-N-PHENYLHYDROXYLAMINE AS A SELECTIVE COLLECTOR

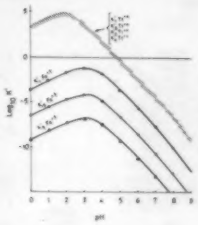
Giorgio Rinelli, Rome, and Anna M. Marabini, Frascati, both of Italy, assignors to Consiglio Nazionale delle Richerche, Rome, Italy

Filed Feb. 14, 1983, Ser. No. 466,281

Claims priority, application Italy, Feb. 12, 1982, 47783 A/82

Int. Cl.³ B03D 1/14

U.S. Cl. 209—166 **3 Claims**



1. A process for rutile flotation from rutile ores associated with iron bearing components, characterized in that an alcoholic solution of N-benzoyl-N-phenyl-hydroxylamine is employed as a selective flotation collector of rutile.

4,461,702

CLASSIFIER

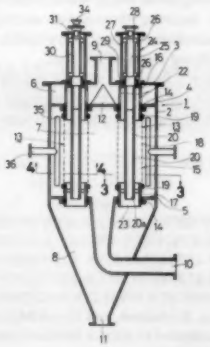
Toshio Furukawa, Chiba, Japan, assignor to Kikkoman Corporation, Chiba, Japan

Filed Mar. 15, 1982, Ser. No. 358,371

Claims priority, application Japan, Mar. 16, 1981, 56-37615

Int. Cl.³ B07B 1/22

U.S. Cl. 209—303 **8 Claims**



1. A classifier for separating particulate matter into relatively course and fine particles, comprising:

a casing adapted to permit said particulate matter to flow therein along a predetermined direction;

a plurality of rotatably mounted cylindrical screen assemblies, each said assembly including a cylindrical screen mounted in said casing and axially extending substantially along said predetermined direction so as to force the fine particles to traverse said cylindrical screen so as to be separated from the coarse particles;

each said cylindrical screen including an uppermost end and a lowermost end, said ends being airtightly sealed at peripheral portions thereof to upper and lower apertured partitions so as to prevent a direct flow of said particulate

matter from the interior of said screen to the exterior thereof;

a plurality of air purge pipes, corresponding in number to the number of said cylindrical screen assemblies, each said air purge pipe being stationarily disposed in said casing so as to extend axially of said casing along an associated one of said screens, and being connected to a source of compressed air;

said air purge pipes each having at least one opening facing an associated one of said cylindrical screen assemblies so as to blow particles off said screen assembly to prevent clogging thereof;

said air purge pipes being disposed adjacent respectively to said cylindrical screen assemblies radially outward thereof;

drive means including a plurality of drive shafts, corresponding in number to said cylindrical screen assemblies, each said drive shaft being concentric with an axis of an associated one of said cylindrical screen assemblies and being operably connected thereto so as to rotate said cylindrical screen assembly about its own axis, so that the entire surface area of said screen may be exposed to said blowing by said air purge pipe;

the axes of said cylindrical screen assemblies and the axes of said drive shafts being positionally fixed with respect to said casing;

said casing including at least one inlet port communicating with the interior of the screens, at least one coarse particle outlet port communicating with the interior of the screens, and at least one fine particle outlet port communicating with the exterior of the screens, said ports being separated from each other; and

said inlet port communicating with the interior of each said screen through an upper end opening thereof, said coarse particle outlet port communicating with the interior of each said screen through a lower end opening thereof, and said fine particle outlet port communicating with the interior of said screen through the mesh of said screen.

4,461,703

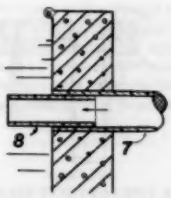
SWIMMING POOL AERATION CLEANING SYSTEM

Heinz H. Vetter, 20476 Barnard Ave., Walnut, Calif. 91789

Filed Feb. 24, 1981, Ser. No. 237,742

Int. Cl.³ E04H *3/16*

U.S. Cl. 210—169 **2 Claims**



1. A pool aeration cleaning system comprising:

a swimming pool including a bottom wall having a first bottom drain opening therein and a plurality of sides enclosing a body of water;

a water recirculating pump having inlet and outlet water connections;

a water cleansing filter connected to said pump outlet;

a return conduit to discharge cleansed water from said filter under pressure from said pump;

a drain conduit connected between said first bottom drain opening and said water cleansing filter;

a skimmer structure positioned adjacent said drain conduit and one said pool side wall, comprising a reservoir communicating with the surface level of the pool water, having a second bottom wall with a second bottom drain opening therein communicating with said drain conduit;

a directional flow valve positioned in said second bottom drain opening for selectively directing water to the filter from said first bottom drain opening via said drain conduit or from said surface pool water level via the skimmer reservoir, said directional flow valve comprising a tubular portion positioned in said second bottom drain opening, and a depending curvilinear portion inclined to the axis of and configured to fit within the second bottom wall opening and said drain conduit, in adjustable fluid communication with said drain conduit so that rotation of said curvilinear position will adjust the proportion of fluid flow from said reservoir relative to fluid flow from said first bottom drain opening to said pump; and

a tubular aeration member positioned coaxially within said tubular portion and above said depending curvilinear portion of said directional flow valve, said aeration member having a first open end extending above said pool water surface and a second lower open end in air communication with selected water flow to said filter from said reservoir, so that when said water flow from said skimmer reservoir is selectively blocked, atmospheric air will be drawn from within said tubular aeration member by the pump and admixed with water flow from said first bottom drain opening to the filter.

4,461,704

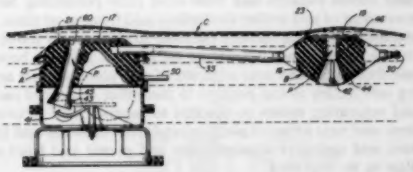
POOL CLEANING DEVICE FOR OPERATION UNDER FLOATING POOL COVER

Walter T. Selsted, Cupertino, Calif., assignor to Arneson Products, Inc., Corte Madera, Calif.

Filed Nov. 9, 1981, Ser. No. 319,562

Int. Cl.³ E04H *3/20*

U.S. Cl. 210—169 **7 Claims**



1. In a floating pool cleaning apparatus having positive buoyancy and propelled motion adjacent to the surface of a swimming pool, an apparatus for permitting such motion under a floating pool cover, comprising:

a float having a concavity defined at a top portion of said apparatus disposed to confront said pool cover;

an annulus surrounding said defined concavity; and

a high volume low pressure jet pump comprising a tube, said tube at one end communicating to said concavity and at an opposite end having a low volume, high pressure jet port discharging thereto, said pump discharging to the volume of said concavity to cause a flow of water from said pump to the volume of said concavity, over said annulus, and between said cover and said pump.

4,461,705

ENDLESS CHAIN DRIVEN RACK AND PINION DISPLACEMENT DEVICE FOR FILTER PRESSES

Gerd-Peter Gehrmann, Gerlafingen, Switzerland, assignor to Von Roll AG, Gerlafingen, Switzerland

Filed Oct. 14, 1982, Ser. No. 434,380

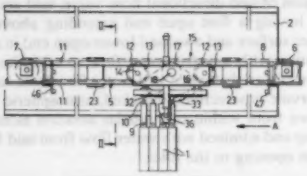
Claims priority, application Switzerland, Oct. 22, 1981, 6757/81

Int. Cl.³ B01D *25/12*

U.S. Cl. 210—225 **6 Claims**

1. In a filter press defining a length having a plurality of

plates arranged along said length of said filter press to be compressed in an operating position from front to rear and to be sequentially separated from said operating position, apparatus for separating and displacing said plates comprising, a rail mounted above and extending along said length of said press, a trolley supported on said rail for movement in a direction reciprocably along said rail; an endless chain operably connected to said trolley for moving said trolley, a reversible motor operably connected to said chain for driving said chain, a sprocket wheel fixed on a shaft journalled in said trolley entrained with said chain, separating means comprising an elongated rack supported in said trolley for movement reciprocably between an upper position and a lower position in a direction perpendicular to said direction of movement of said trolley toward and away from said plates, a pinion mounted on said shaft and meshing with said rack, and spring means for biasing said rack in said upper position away from said plates,



said spring means also exerting on said sprocket wheel a frictional force preventing rotation of said sprocket wheel while said chain is moving said trolley, pawl means pivotally depending from said trolley and catch means pivotally depending from said trolley in opposition to said pawl means, said catch means for providing that when said trolley is moved in one direction said trolley is stopped at the front-most of said plates and when said trolley is moved in the opposite direction, said pawl means engages said front-most plate permitting further movement of said trolley to displace said front-most plate, said endless chain being thereby operable to sequentially move said trolley to place said separating means in a position between said front-most and next adjacent of said plates and on arresting said trolley in this position to thereafter cause said rack of said separating means to descend to separate said front-most from said next adjacent plate, ascend from between said front-most and said next adjacent plate and permit said front-most plate to be displaced.

4,461,706

APPARATUS FOR THE COUNTERCURRENT TREATMENT OF LIQUIDS WITH ADSORBENTS

Günter Siegers, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 267,234, May 26, 1981, Pat. No. 4,369,114, which is a continuation-in-part of Ser. No. 198,745, Oct. 20, 1980, abandoned. This application Sep. 27, 1982, Ser. No. 424,709

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1979, 2950875

Int. Cl.³ B01D *23/24*

U.S. Cl. 210—275 **5 Claims**

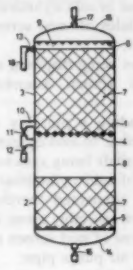
1. An ion exchange resin-containing filter for the treatment of liquids in countercurrent flow, the volume of the exchanger mass decreasing on charging and increasing on regeneration, charging being effected in upward flow, the lower portion of the exchanger mass being in the form of a fluidized bed and the upper portion thereof being in the form of a fixed bed during charging, regeneration being effected in downward flow and backwashing being effected in upward flow, the filter comprising the following features:

(a) that it is divided into 2 or 3 chambers separated by trays which are permeable only to liquid;

(b) that adjacent chambers are connected to one another by a pipeline which bridges the trays permeable to liquid, permits the transfer of the ion exchanger and has a shut-off organ;

(c) that the pipeline bridging the trays which are permeable to liquid is mounted in the upper quarter of the lower chamber and in the lower quarter of the upper chamber;

(d) that the ratio of the volume of the two chambers is 0.5 to 1.5:1 in the case of a two chamber filter and that of the



three chambers is 0.5 to 1.5:0.5 to 1.5:1 in the case of a three-chamber filter;

(e) that the total amount of ion exchanger in the filter is 55 to 85% of the filter volume, the top of the ion exchanger mass in the lowermost chamber when beginning operation being below the level of communication between the pipeline and lower chamber thereby forming a backwash space.

4,461,707

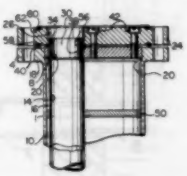
ULTRAFILTRATION AND REVERSE OSMOSIS TUBULAR MEMBRANE MODULE

William L. Thayer; Adam J. Bennett, both of Ottawa; Oleh Kutowy, North Gower, and Srinivasa Sourirajan, Ottawa, all of Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Oct. 30, 1981, Ser. No. 316,963

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—321.1 **2 Claims**



1. An ultrafiltration and reverse osmosis tubular membrane module, comprising:

(a) an elongated, open ended, tubular casing having a liquid outlet, connecting flanges at each end, and stepped bore portions at each end,

(b) a plurality of tubular membrane assemblies each comprising an inner, membrane tube and an outer porous, support tube supporting the membrane tube, each tubular membrane assembly extending along, and out of each end of, the casing,

(c) two spacer plates each having, for each tubular membrane assembly, a tubular membrane assembly locating hole, each spacer plate being located one at each end of the tubular casing and in the stepped bore portion at that end,

(d) two sealing plates, one at each end of the tubular casing

and covering the spacer plate and the tubular casing flange at that end, the sealing plates each having stepped, tubular membrane assembly holes corresponding to the locating holes in the spacer plates,

(e) for each tubular membrane assembly, two support sleeves, with a support sleeve in each end of a tubular membrane assembly, the support sleeves slidably fitting in end portions of the bores of the tubular membrane assemblies and having collar portions outside the tubular membrane assemblies and located against the step in the stepped holes in the sealing plates,

(f) means sealing the tubular membrane assemblies to the spacer plates and the sealing plates by being compressed around portions of each tubular membrane assembly that are supported by a support sleeve,

(g) means sealing the sealing plates to the flanges,

(h) means clamping the spacer plates and the sealing plates together,

(i) means clamping the sealing plates to the flanges, and

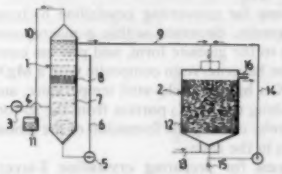
(j) tubular membrane assembly spacing means located intermediate the length of the tubular casing.

4,461,708

PROCEDURE FOR PURIFYING EFFLUENT WATERS, PARTICULARLY THOSE PRODUCED IN WOOD-PROCESSING INDUSTRY

Risto Hakulinen, Kiskotie; Mirja Salkinoja-Salonen, Helsinki; Jorma Räsänen, and Juhani Kyytsönen, both of Savonlinna, all of Finland, assignors to Enso-Gutzeit Oy, Helsinki, Finland

Filed Dec. 15, 1982, Ser. No. 450,126
Claims priority, application Finland, Dec. 21, 1982, 814095
Int. Cl.³ C02F *3/30*
U.S. Cl. 210—605 **5 Claims**



1. A method for purifying effluent water comprising treating the effluent water in a reactor containing a fluidized bed of finely divided particles and a bed of agglomerated fibrous material which serve as a fixing base for bacteria which decompose the impurities in the water, wherein the bed of agglomerated fibrous material constitutes a separate layer above the fluidized bed.

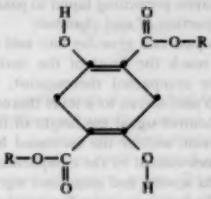
4,461,709

SEPARATION OF POLYVALENT CATIONS BY TRANSPORT THROUGH LIQUID MEMBRANE

Hans Batzer, Arlesheim, Switzerland, and Joel Sinnreich, Bensheim, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 274,962, Jun. 18, 1981, Pat. No. 4,400,296.
This application Sep. 22, 1982, Ser. No. 421,210
Claims priority, application Switzerland, Jun. 23, 1980, 4807/80
Int. Cl.³ B01D *11/04*; C02F *1/26*
U.S. Cl. 210—643 **2 Claims**

1. A process for the separation of polyvalent cations from monovalent cations or for the selective separation of different polyvalent cations from aqueous solutions, according to the principle of coupled ion transport and using a liquid membrane, which comprises using a liquid membrane, which consists of an essentially water-immiscible organic solvent and of an essentially water-insoluble succinosuccinic acid diester, dissolved in the said solvent, of the formula I



(I)

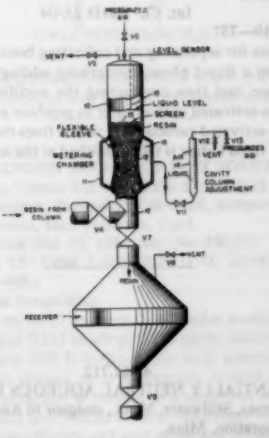
in which R is an alkyl, alkenyl or cycloalkyl having up to 24 C atoms, the proportion of the succinosuccinic acid diester in the organic solvent being at least 0.01% by weight, based on the organic solvent, or of the melt of a compound of the formula I, between two aqueous solutions having different pH values, the aqueous solution into which the polyvalent cations are transported through the liquid membrane having a pH value of 1 to 8, and this pH value necessarily being lower than the pH value of the other aqueous solution, which contains the cations to be separated selectively.

4,461,710

ADJUSTABLY METERED TRANSFER OF RESIN INCREMENTS IN FOLDED BED ION EXCHANGE SYSTEMS

William R. Erickson, Lakeland, and Solon G. Whitney, Bartow, both of Fla., assignors to American Petro Mart, Inc., Bartow, Fla.

Filed May 31, 1983, Ser. No. 499,205
Int. Cl.³ B01D *15/04*
U.S. Cl. 210—675 **6 Claims**



1. In a moving folded bed ion exchange system, the method of metering the volume of liquid-containing increments of ion exchange resin granules expelled from one end portion of a column, said column having a resin inlet to said one end portion and a resin outlet from its opposite end portion and being completely filled with compacted resin granules containing liquid within and between the granules, including the step of transferring under hydraulic pressure, packed liquid-containing resin granules into said column through said resin inlet while simultaneously expelling packed liquid-containing resin from said column through said resin outlet, wherein the improvement comprises:

(a) passing said expelled resin granules under said hydraulic

pressure into a lower portion of an upwardly-extending metering chamber, said chamber having a granule-retaining screen disposed thereacross at a level above said lower portion, said screen permitting liquid to pass therethrough into an upper portion of said chamber;

(b) continuing to pass said granules into said chamber until said granules reach the level of the underside of said screen and are compacted thereagainst, liquid having passed through said screen to a level thereabove;

(c) sensing as a control signal the height of the liquid level above said screen, and/or the increased liquid pressure below said screen caused by the compaction of said granules against said screen, and using said signal to stop the application of hydraulic pressure for passing granules into said chamber, whereby said chamber contains a precisely measured packed increment of resin granules; and

(d) transferring said measured increment to another unit in said moving folded bed ion exchange system.

4,461,711

METHOD FOR SEPARATING AND COLLECTING IODINE

Horst Behrens, Munich, Fed. Rep. of Germany, assignor to Gesellschaft fur Strahlen- und Umweltforschung mbH, Fed. Rep. of Germany

Filed Mar. 4, 1982, Ser. No. 354,645

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1981, 3108991

Int. Cl.³ B01D *15/04*

U.S. Cl. 210—757 **16 Claims**

1. Process for separating and collecting bound and also free iodine from a liquid phase, comprising adding an acid to the liquid phase, and then conducting the acidified liquid phase through an activated carbon filter to produce a chemical reaction at the activated carbon filter which frees the bound iodine, and the so freed iodine is then adsorbed at the activated carbon filter.

4,461,712

SUBSTANTIALLY NEUTRAL AQUEOUS LUBRICANT

Nelson Jonnes, Stillwater, Minn., assignor to American Polywater Corporation, Minn.

Filed Jan. 31, 1983, Ser. No. 462,362

Int. Cl.³ C10M *1/06, 3/04, 5/04, 7/08*

U.S. Cl. 252—49.3 **20 Claims**

1. An aqueous gel lubricant which comprises:

(a) a major proportion of water;

(b) an effective gelling amount of a polymeric polyelectrolyte acrylate compound having a molecular weight of at least about 1,000;

(c) an effective lubricating amount of a fatty acid salt compound; and

(d) an effective lubricating amount of polyalkylene oxide having a molecular weight of at least about 300,000;

wherein the pH of the aqueous gel lubricant is about neutral.

4,461,713

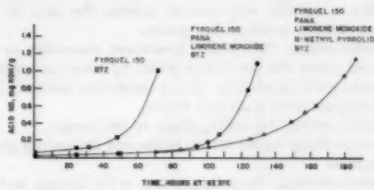
ACID-RESISTANT PHOSPHATE ESTER FUNCTIONAL FLUIDS

Joseph F. Anzenberger, Sr., New City, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 1, 1983, Ser. No. 481,436

Int. Cl.³ C10M *3/40, 3/26*

U.S. Cl. 252—49.9 **21 Claims**



1. A phosphate ester functional fluid containing an acid-resistant additive composition, wherein said composition comprises as essential ingredients: (1) N-alkyl-2-pyrrolidone, (2) epoxide, and (3) triazole.

4,461,714

METHOD OF MAKING CRYSTALLINE 2-LAYER LITHIUM ALUMINATES IN ION EXCHANGE RESINS

John L. Burba, III, Angleton, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 217,614, Dec. 18, 1980, Pat. No. 4,348,295. This application Aug. 30, 1982, Ser. No. 412,678

Int. Cl.³ C09K *3/00*

U.S. Cl. 252—184 **20 Claims**

1. A process for converting crystalline hydrous alumina, $Al(OH)_3$, bayerite, dispersed within a macroporous ion exchange resin to the gibbsite form, said process comprising

reacting the bayerite/resin composite with a MgX_2 solution, where X is halide, at elevated temperature, and

water-washing the MgX_2 portion from the so-formed product, thereby causing the formation of the gibbsite form of $Al(OH)_3$ in the resin.

6. A process for preparing crystalline 2-layer $LiX.2Al(OH)_3.nH_2O$, where X is anion and nH_2O represents waters of hydration, said process comprising

reacting bayerite, dispersed within a macroporous ion exchange resin, with a MgX_2 solution, where X is halide, at elevated temperature, then water-washing the MgX_2 portion from the so-formed product, thereby causing the formation of gibbsite from the bayerite in the resin,

then reacting the so-sormed gibbsite with hot LiX solution, where X is anion, thereby converting the gibbsite to crystalline 2-layer $LiX.Al(OH)_3.nH_2O$.

4,461,715

THERMALLY ADDRESSED CHOLESTERIC-SMECTIC LIQUID CRYSTAL DEVICE AND COMPOSITION

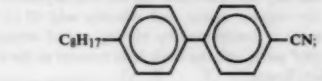
Sun Lu, San Jose, and David B. Chung, Santa Clara, both of Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

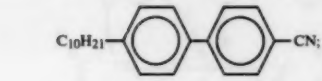
Division of Ser. No. 251,247, Apr. 6, 1981, Pat. No. 4,391,492. This application Mar. 28, 1983, Ser. No. 479,140

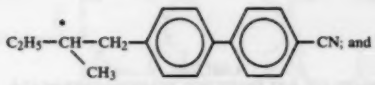
Int. Cl.³ C09K *3/34;* **G02F** *1/13*

U.S. Cl. 252—299.1 **5 Claims**

1. A liquid crystal composition which can be thermally addressed and which can provide a dark image upon a lighter background, comprising a mixture comprising approximately from 40 to 60 weight percent of "x" and approximately from 30 to 50 weight percent of "y", and approximately 5 to 10 weight percent of "z" wherein x, y, and z are represented by the formulas;

x. 

y. 

z. 

at least one pleochroic dye of high order parameter approximately from 0.5 to 3 weight percent based upon the total composition mixture.

4,461,716

USE OF FATTY AMINES TO IMPROVE THE PROPERTIES OF FOAMS AND IMPROVED FOAMING CONTAINING SAID AMINES

Michel Barbarin, Enghien-les-Bains, and Ghislain Dufau, Bouffemont-Moisselles, both of France, assignors to Seppic, France

Filed Oct. 2, 1979, Ser. No. 81,195
Claims priority, application France, Oct. 17, 1978, 78 29561
Int. Cl.³ B01J *13/00;* **B01F** *17/02, 17/10, 17/16*
U.S. Cl. 252—307 **5 Claims**

1. A method for improving the qualities of the foams obtained by foaming an aqueous solution of a surface agent of the anionic or amphoteric type, wherein the foaming is produced in the presence of 2 to 50% by weight, with respect to the weight of the said surface agent, of fatty amine of formula:

wherein R_1 is a hydrogen atom or a staight or branched alkyl radical, saturated, in C_4–C_{18}, and R_2 is a straight or branched alkyl radical, saturated, in C_4–C_{18}.

5. Foaming agents permitting to obtain aqueous foams with improved properties, containing a surface agent of the anionic or amphoteric type and 2 to 50% by weight with respect to said surface agent of a fatty amine of formula:

wherein R_1 is a hydrogen atom or a staight or branched alkyl radical, saturated, in C_4–C_{18}, and R_2 is a straight or branched alkyl radical, saturated, in C_4–C_{18}.

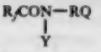
4,461,717

STABLE GAS-CARRYING COMPOSITIONS

Robert E. Moore, Wilmington, Del., assignor to Sun Tech, Inc., Philadelphia, Pa.

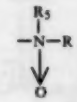
Filed Mar. 19, 1982, Ser. No. 360,039
Int. Cl.³ A61K *31/025;* **B01J** *13/00*
U.S. Cl. 252—312 **19 Claims**

1. A gas transporting composition comprising a stable, uniform, aqueous dispersion of a non-aromatizable perfluorinated C_9–C_{18} polycyclic hydrocarbon containing at least two bridgehead carbon atoms linked through a bridge containing at least one carbon, atom, said dispersion containing an effective for dispersion of the perfluorinated hydrocarbon, of an amidoamine oxide surfactant of the formula



wherein R_f is a perfluoroalkyl radical of 4 to about 25 carbon atoms or a polyfluoroalkoxyalkyl radical wherein the alkoxy group contains 3 to about 40 carbon atoms of which at least a major portion thereof are perfluorinated and the alkyl group contains 2 to about 40 carbon atoms, fluorinated or unfluorinated; Y is hydrogen or alkyl of 1 to 6 carbon atoms; R is a straight- or branched-chain alkylene radical of the formula

wherein z is an integer of 1 to 6; and Q is an aliphatic amine oxide radical of the formula:



wherein R_5 and R_6 are each alkyl radicals of 1 to 6 carbon atoms or hydroxy-terminated alkyl radicals of 2 to 6 carbon atoms; said composition exhibiting at 25±2° C. an average particle size of not over 0.1 micron initially and less than 0.3 micron after about one year.

18. The composition of claim 1 wherein the surfactant is

and the perfluorinated polycyclic hydrocarbon is a mixture of F-dimethyladamantane and F-trimethylbicyclononane.

4,461,718

WAVELENGTH ACCURACY TEST SOLUTION

Wilbur I. Kaye, Corona Del Mar; Lilla S. Sun, Seal Beach, and John C. Anderson, Burbank, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 15, 1981, Ser. No. 330,972
Int. Cl.³ C09K *3/00;* **G01N** *31/00, 33/00*
U.S. Cl. 252—408.1 **5 Claims**

1. A solution comprising:
(a) from about 0.025 to about 0.140 molar neodymium;
(b) from about 0.135 to about 0.550 molar samarium; and
(c) up to about 0.02 N hydrochloric acid; wherein said neodymium is present as a neodymium ionized constituent and said samarium is present as a samarium ionized constituent, said neodymium ionized constituent being ionized neodymium chloride and said samarium ionized constituent being ionized samarium chloride.

4,461,719

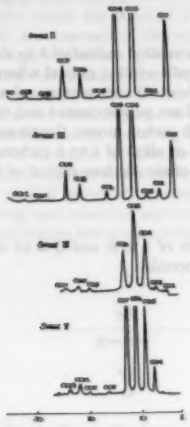
LAMELLAR CARBON-NITROSYL OR NITRONIUM SALT COMPOSITIONS

F. Lincoln Vogel, R.D. 3, Whitehouse Station, N.J. 08889, and William C. Forsman, Swarthmore, Pa., assignors to F. Lincoln Vogel, White House Station, N.J.

Filed Mar. 14, 1983, Ser. No. 475,368
Int. Cl.³ H01B *1/04*
U.S. Cl. 252—503 **29 Claims**

1. A process for the preparation of a electrically conductive

lamellar carbon composition, comprising carbon having a graphite-like, stacked-plane-crystalline form intercalated with one or more nitrosyl salts selected from NOX or nitronium salts selected from NO_2X wherein X is a stable, conjugate anion of an electrophilic atom, molecule or Lewis acid, which process comprises:



reacting carbon having a graphite-like, stacked-plane-crystalline form with said nitrosyl or nitronium salts dissolved in a dry, polar, aprotic solvent at about ambient temperature to about 90° C. for about 10 minutes to about 30 hours or until the desired stage of intercalation has been produced.

4,461,720

FIRE-RETARDANT TREATMENT COMPOSITION

Andre G. Loyvet, and Dennis J. Morgan, both of Roseburg, Oreg., assignors to Hoover Treated Wood Products, Inc., Thompson, Ga.

Filed May 24, 1982, Ser. No. 381,582

Int. Cl.³ C09K *3/28*

U.S. Cl. 252—607 **5 Claims**

1. A fire-retardant composition prepared by

reacting dicyandiamide with water under acidic conditions to convert the dicyandiamide to an aqueous guanyl urea solution,

adding formaldehyde and melamine to the guanyl urea solution to produce a solution of methylolated guanyl urea and melamine, said solution containing a mole ratio of guanyl urea to melamine in the range of from 5:1 to 10:1, and

introducing phosphoric acid to said methylolated guanyl urea and melamine solution with such reacting with the methylolated guanyl urea to produce a phosphate salt thereof.

4,461,721

WOOD PRESERVATIVE

Reimer Goettsche, Baden-Baden, and Hans-Norbert Marx, Buehl-Weitenung, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 12, 1982, Ser. No. 367,588

Int. Cl.³ C09K *3/28*

U.S. Cl. 252—607 **10 Claims**

1. A wood preservative comprising an aqueous composition which consists essentially of:

(a) from 20 to 60 parts by weight of a salt forming composite consisting of boric acid and a water-soluble organic amine, and

(b) from 40 to 80 parts by weight of sodium polyborate or a mixture of boric acid and borax in a weight ratio of from 2:1 to 1:1.2 leaving out of account the boric acid present as the salt of the organic amine, and wherein said 40 to 80 parts by weight is determined by leaving out of account the presence of water and the boric acid present as the salt of the organic amine.

4,461,722

METHOD OF SOLIDIFYING WASTE MATERIALS, SUCH AS RADIOACTIVE OR TOXIC MATERIALS, CONTAINED IN AQUEOUS SOLUTIONS

Josef Knieper, Setterich; Heinz Printz, Rödingen, and Karl May, Julich, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Continuation of Ser. No. 134,752, Mar. 28, 1980, abandoned, and a continuation of Ser. No. 841,712, Oct. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 701,078, Jun. 30, 1976, abandoned. This application Apr. 5, 1982, Ser. No. 365,305

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1975, 2531056

Int. Cl.³ G21F *9/16*

U.S. Cl. 252—628 **6 Claims**

1. A method of solidifying wastes which are in aqueous solution without producing gas and heat, the method comprising the steps of:

(a) first forming a granular mixture having a specific gravity greater than water by combining gypsum with a substance selected from the group consisting of sodium silicate and potassium silicate to form a stable mixture with a long shelf life which is readily available for use, and

(b) subsequent to forming the mixture of Step (a), combining the mixture of Step (a) with the aqueous waste solution to form a homogeneous mixture which hardens into a homogeneous solid.

4,461,723

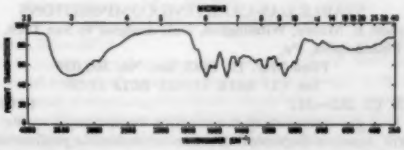
ANTIBIOTIC A-4696 FACTOR G

Charles L. Hershberger, New Palestine; Kurt E. Merkel, Mooresville; Robert E. Weeks, and Gene M. Wild, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

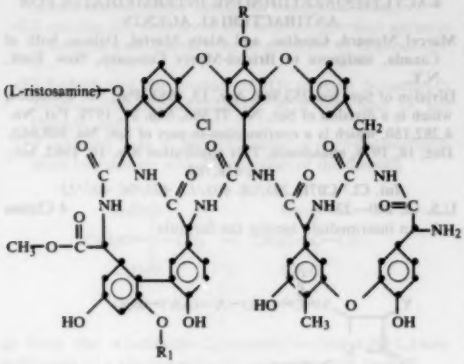
Continuation-in-part of Ser. No. 217,960, Dec. 18, 1980, abandoned. This application Sep. 29, 1982, Ser. No. 426,493

Int. Cl.³ C07C *103/52*

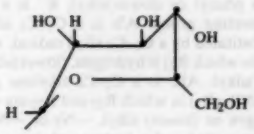
U.S. Cl. 260—112.5 R **4 Claims**



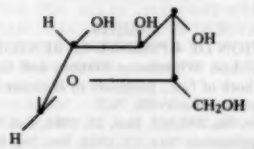
1. The antibiotic A-4696G of the formula



wherein R is



and R_1 is



and the pharmaceutically acceptable non-toxic acid addition salts thereof.

4,461,724

PEPTIDE COMPOUNDS, A PROCESS FOR MANUFACTURING THEM, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM, AND METHODS FOR TREATING ULCER AND THROMBUS WITH THEM

Jin-emon Konishi, Musashino, Japan, assignor to Nippon Zoki Pharmaceutical Co., Ltd., Osaka, Japan

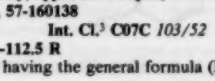
Filed Oct. 22, 1982, Ser. No. 435,974

Claims priority, application Japan, Oct. 28, 1981, 56-172515; Sep. 14, 1982, 57-160138

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **19 Claims**

1. Peptides having the general formula (I):



(I)

wherein A is a member selected from the group consisting of Gly-, Ala-, D-Ala-, Leu-, Tyr-, Sar-, Pro-, (pyr)Glu-, Trp-, Val-, Ileu-, Ser-, Thr-, Hyp-, Glu-, Gln-, Asn-, Asp-, Phe-, and DOPA, which may optionally have protecting group; R_1 denotes hydrogen atom, lower alkyl group, acyl group, alkoxycarbonyl group, or aralkyloxycarbonyl group which may optionally be substituted with halogen atom, alkoxy group, or nitro group; R_2 denotes hydroxy group, alkoxy group, aryloxy group, aralkyloxy group, or amino group which may optionally be substituted with lower alkyl group; R_3 denotes hydrogen atom, lower alkyl group, acyl group, or aralkyl group; R_4 denotes hydrogen atom, tosyl group, trityl group, aralkyl group, or aralkyloxycarbonyl group which may optionally be substituted with halogen atom, alkoxy group, or nitro group; R_5 denotes hydrogen atom, lower alkyl group, acyl group, tosyl group, alkoxycarbonyl group, or aralkyloxycarbonyl group which may optionally be substituted with halogen atom, alkoxyl group, or nitro group, and pharmaceutically acceptable salts thereof.

4,461,725

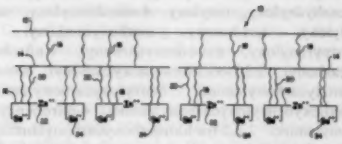
PROTEIN COMPOUNDS

David C. Mitchell, 2472 S. 900 East, #8, Salt Lake City, Utah 84106

Continuation-in-part of Ser. No. 194,626, Oct. 6, 1980, abandoned. This application Jun. 25, 1982, Ser. No. 392,371

Int. Cl.³ C07C *103/52*; C07G *7/00*; A61K *35/14, 37/00*

U.S. Cl. 260—112.5 R **29 Claims**



1. A chemical compound comprising:

at least one molecule of bacitracin having adjacent isoleucine and cysteine amino acid residues; and

at least one selenium ion, each of said selenium ions being substituted for a sulfur atom in a sulfide bond between the adjacent isoleucine and cysteine amino acid residues in a corresponding bacitracin molecule.

4,461,726

DESULFURIZATION OF PENICILLINS TO PREPARE AZETIDINONES

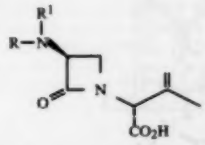
Chung-Chen Wei, Cedar Knoll, and Manfred Weigele, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed May 17, 1982, Ser. No. 379,386

Int. Cl.³ C07D *205/08, 403/04, 401/12, 403/12*

U.S. Cl. 260—239 A **16 Claims**

1. A process for the preparation of a compound of the formula



III

wherein R and R^1, taken together, are phthaloyl, or R^1 is hydrogen and R is hydrogen or a group of the formula

wherein R^2 is

(a) hydrogen, lower alkyl, halomethyl or phenyl;

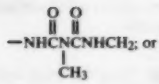
(b) benzyloxy, 4-nitrobenzyloxy, 2,2,2-trichloroethoxy, tert-butoxy or 4-methoxybenzyloxy;

(c) a group of the formula

wherein m is 0 or 1, and R^3 is 1,4-cyclohexadienyl, phenyl or phenyl substituted with 1 or 2 substituents independently selected from the group consisting of halo, hydroxy, nitro, cyano, trifluoromethyl, C_1–C_7 alkyl and C_1–C_7 alkoxy;

(d) a group of the formula

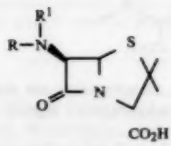
wherein R^3 is 1,4-cyclohexadienyl, phenyl or phenyl substituted with 1 or 2 substituents independently selected from the group consisting of halo, hydroxy, nitro, cyano, trifluoromethyl, C_1–C_7 alkyl and C_1–C_7 alkoxy, and W is hydroxy, carboxy, formyloxy, chloroacetoxy, benzyloxy, benzhydryloxy, trityloxy, 4-nitrobenzyloxy, trimethylsilyloxy, tert-butoxy, methoxymethoxy, tetrahydropyranyloxy, tert-butoxycarbonyl, 4-nitrobenzyloxycarbonyl, 2,2,2-trichloroethoxycarbonyl, amino, tert-butoxycarbonylamino, benzyloxycarbonylamino, 4-methoxybenzyloxycarbonylamino, 4-nitrobenzyloxycarbonylamino, 2,2,2-trichloroethoxycarbonylamino, 1-carbomethoxy-2-propenylamino, or a group of the formula



(e) a group of the formula

wherein R^4 is 2-furyl, 5-tetrazolyl, 1-tetrazolyl, 4-isoxazolyl, or pyridyl, or when R is hydrogen, a hydrochloride acid addition salt thereof,

which comprises reacting a corresponding compound of the formula



with Raney nickel, when R and R^1 are hydrogen, at a temperature in the range of from about 60° C. to about 100° C. for a period of time in the range of from about 15 to about 60 minutes or, when R and/or R^1 are other than hydrogen, at a reaction temperature in the range of from about 100° C. to about 200° C. for a period of time in the range of from about 10 to about 40 minutes and wherein said Raney nickel is prepared by reacting a nickel aluminum iron alloy in powder form with an aqueous solution of NaOH at 110° C. for one hour.

4,461,727

4-ACYLTHIOAZETIDINONE INTERMEDIATES FOR ANTIBACTERIAL AGENTS

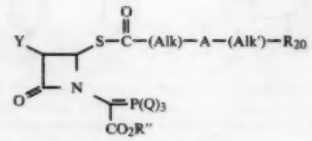
Marcel Menard, Candiac, and Alain Martel, Delson, both of Canada, assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 253,982, Apr. 13, 1981, Pat. No. 4,406,834, which is a division of Ser. No. 77,886, Sep. 21, 1979, Pat. No. 4,282,150, which is a continuation-in-part of Ser. No. 968,663, Dec. 18, 1978, abandoned. This application Sep. 10, 1982, Ser. No. 416,780

Int. Cl.³ C07D *205/08, 403/12, 403/04, 401/12*

U.S. Cl. 260—239 A **4 Claims**

1. An intermediate having the formula



wherein Q is phenyl or (lower)alkyl; R'' is a conventional carboxyl protecting group; Alk is a C_1–C_2 alkylene group optionally substituted by a C_1–C_4 alkyl radical; A is O, S, SO, SO_2 or NR_{21} in which R_{21} is hydrogen, (lower)alkyl, phenyl or phenyl(lower)alkyl; Alk' is a C_2–C_4 alkylene group; R_{20} is —NHOH, $—NR_{22}R_{23}$ in which R_{22} and R_{23} are each independently hydrogen or (lower) alkyl, $—N_3$ or $—NO_2$; and Y is ethyl, α-hydroxyethyl and α-hydroxyethyl in which the hydroxy group is protected by a conventional blocking group; or a pharmaceutically acceptable acid addition salt thereof.

4,461,728

PREPARATION OF 4-PHENYL-1,3-BENZODIAZEPINS

Thomas B. K. Lee, Whitehouse Station, and George E. Lee, Somerville, both of N.J., assignors to Hoechst Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 333,965, Dec. 23, 1981, Pat. No. 4,374,067. This application Nov. 12, 1982, Ser. No. 441,128

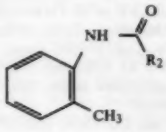
Int. Cl.³ C07D *243/03*

U.S. Cl. 260—239 BD **6 Claims**

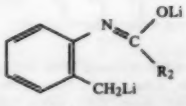
1. A method for preparing 4,5-dihydro-2,3-dimethyl-4-phenyl-3H-1,3-benzodiazepin or a pharmaceutically acceptable salt thereof, said method comprising

(A) reacting

a compound of the formula



with n-alkyllithium to provide a dilithio intermediate of the formula



where R_2 is $—C(CH_3)_3$ or $—OC(CH_3)_3$;

(B) quenching the dilithio intermediate with benzaldehyde and treating the resulting reaction mixture with an aqueous medium;

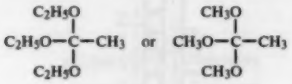
(C) at least partially dissolving the product of (B) in a sol-

vent therefor and treating the resulting mixture with at least a stoichiometric amount of thionyl chloride;

(D) reacting the product of (C) with monomethyl amine in solution in a solvent therefor at about 80° C. to about 120° C.;

(E) hydrolyzing the product of (D) to form N-methyl-2-amino-α-phenylphenethylamine as a free base or salt thereof; and

(F) cyclizing said N-methyl-2-amino-α-phenylphenethylamine by reaction with a compound of the formula



(VII) (VIII)

to form the 4,5-dihydro-2,3-dimethyl-4-phenyl-3H-1,3-benzodiazepin or a pharmaceutically acceptable salt thereof.

4,461,729
METHOD FOR THE SELECTIVE PREPARATION OF SECONDARY ALCOHOLS AND DERIVATIVES THEREOF

Lewis B. Young, Skillman, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 222,835, Jan. 6, 1981, abandoned. This application Aug. 23, 1982, Ser. No. 410,288 The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.

Int. Cl.³ C07C *67/04, 27/02, 41/03*

U.S. Cl. 260—459 R **15 Claims**

1. A process for the preparation of secondary alcohol mixtures enriched in alcohols of the formula

wherein R is alkyl of 1 to 18 carbon atoms, said process comprising

(A) reacting an olefin mixture containing at least 25 percent of a C_6 to C_{20} olefin having no unsaturation at the site of the No. 2 carbon atom thereof, with a C_1 to C_{10} carboxylic acid, said reaction being carried out under ester-forming reaction conditions including the presence of a catalyst comprising crystalline zeolite material having a silica to alumina mole ratio of at least 12 and a Constraint Index of from about 1 to 12, to thereby selectively produce an alkyl carboxylate ester product which is enriched in the α-methylalkyl carboxylate ester; and

(B) subsequently hydrolyzing said α-methylalkyl carboxylate-enriched ester product under hydrolysis reaction conditions, to thereby provide said secondary alcohol mixture enriched in alcohols having hydroxy functionality at the 2-position.

12. The process of claim 1 further comprising the step of converting said secondary alcohol mixture to a surface active agent, wherein said secondary alcohol mixture is sulfated.

4,461,730
METHOD FOR THE SELECTIVE PREPARATION OF SECONDARY ALCOHOLS AND DERIVATIVES THEREOF

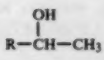
Lewis B. Young, Skillman, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 222,850, Jan. 6, 1981, abandoned. This application Aug. 23, 1982, Ser. No. 410,286 The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.

Int. Cl.³ C07C *67/04, 27/02, 41/03*

U.S. Cl. 260—459 R **13 Claims**

1. A process for the preparation of secondary alcohol mixtures enriched in alcohols of the formula



wherein R is alkyl of 1 to 18 carbon atoms, said process comprising

(A) reacting an olefin mixture containing at least 25 percent of a C_6 to C_{20} olefin having no unsaturation at the site of the No. 2 carbon atom thereof, with a C_1 to C_{10} carboxylic acid, said reaction being carried out under ester-forming reaction conditions including the presence of a catalyst comprising the crystalline zeolite material mordenite, to thereby selectively produce an alkyl carboxylate ester product which is enriched in the α-methylalkyl craboxylate ester, and

(B) subsequently hydrolyzing said α-methylalkyl carboxylate-enriched ester product under hydrolysis reaction conditions, to thereby provide said secondary alcohol mixture enriched in alcohols having hydroxy functionality at the 2-position.

10. The process of claim 1 further comprising the step of converting said secondary alcohol mixture to a surface active agent, wherein said secondary alcohol mixture is sulfated.

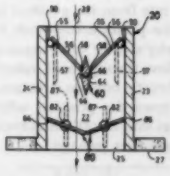
4,461,731
CARBURETOR

William H. Herd, Jr., Fresno, and Stanley F. Curtis, Exeter, both of Calif., assignors to Pollution Controls Industries, Inc., Tulare, Calif.

Filed Nov. 24, 1981, Ser. No. 324,648

Int. Cl.³ F02M *7/22*

U.S. Cl. 261—18 B **10 Claims**



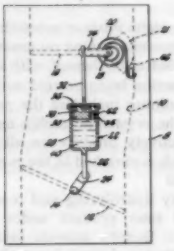
1. In a carburetor for use with a source of liquid fuel and an internal combustion engine and having a throat through which air is drawn during operation, a pair of venturi plates mounted in the throat for pivotal movement between relatively open and closed positions, resilient means urging the venturi plates from open to closed positions in opposition to air drawn through the throat, and a spray bar mounted in the throat; the combination of a primary fuel supply system interconnecting the source of fuel and the spray bar having a primary control valve therein; an enrichment fuel supply system interconnecting the source of fuel and the spray bar having an enrichment control valve therein; an automatic primary control linkage interconnecting one of the plates and the primary control valve for opening and closing the primary control valve in response

to opening and closing of the plate to which it is connected; an automatic enrichment control linkage interconnecting the other of the plates and the enrichment control valve for opening and closing the enrichment control valve in response to opening and closing of said other plate; a block providing an orifice to condition the carburetor for use with different types of fuel; and means removably mounting the block in the enrichment fuel supply system with the orifice in series relation between the source of fuel and the spray bar.

4,461,732
ENGINE AIR INDUCTION SYSTEM

Kevin M. Foley, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 21, 1983, Ser. No. 459,782
Int. Cl.³ F02M 7/22
U.S. Cl. 261—52 **1 Claim**



1. An engine air induction system comprising means defining an induction passage for air flow to the engine, a throttle disposed in said induction passage and movable between closed and wide open positions for controlling air flow therethrough, an air valve disposed in said induction passage and movable between closed and wide open positions, means biasing said air valve to a position which is a measure of air flow through said induction passage, and a linkage connecting said air valve and said throttle for urging said air valve toward its wide open position as said throttle is moved toward its wide open position and for urging said air valve toward its closed position as said throttle is moved toward its closed position, and wherein said linkage includes a dashpot permitting movement of said air valve at a restricted rate from the position to which it is urged by said linkage to the position to which it is biased by said biasing means, whereby said air valve assumes a position which is a measure of air flow through said induction passage when the position of said throttle remains constant, and whereby said air valve is moved toward a position which is indicative of anticipated air flow as said throttle is moved to change the air flow through said induction passage.

4,461,733
CAPILLARY FIN MEDIA

Roy T. Otterbein, Phoenix, Ariz., assignor to Arvin Industries, Inc., Columbus, Ind.

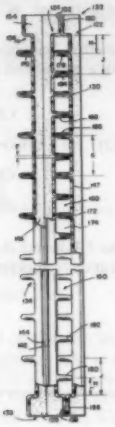
Continuation-in-part of Ser. No. 479,127, Mar. 28, 1983. This application Apr. 15, 1983, Ser. No. 485,200
Int. Cl.³ B01F 3/04
U.S. Cl. 261—153 **9 Claims**

1. A wetted surface air-to-air heat exchanger comprising

a first and second pair of water-impervious plates, each pair of plates being formed by the joining together of two plates along a pair of opposed edge portions of the plates to form first channels through which air and water can flow,

each pair of plates including means for maintaining the plates in a spaced relation and capillary means for distributing water laterally in the first channels by capillary action,

the first pair of plates being joined to the second pair of plates along a second pair of opposed edges to form a second channel through which air can pass,

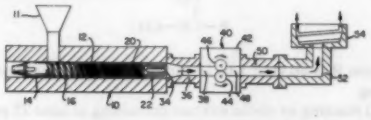


the capillary means comprising a series of fins formed on the plates and extending into the second channel, the fins of adjacent plates being alternately spaced.

4,461,734
PROCESS FOR PLASTICIZATION AND PUMPING OF LOW BULK DENSITY PLASTICS

David N. Jones, Long Valley; Urho S. Haapala, Middlesex, and Leonard S. Scarola, Union, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 13, 1982, Ser. No. 417,579
Int. Cl.³ B29B 1/04, 1/06
U.S. Cl. 264—176 R **6 Claims**

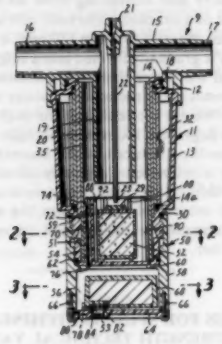


1. A process for the plasticization and pumping of low bulk density thermoplastic materials through extrusion die means employing a rotary mixer type extruder, having feeding, transition and metering sections and a melt pump, said feeding section having relatively deeper screw root depth and/or greater screw pitch and/or greater screw length than normally employed, thereby increasing the volumetric throughput rate through the feed section to compensate for said lower bulk density of material being processed and provide a substantially material-filled metering section, wherein the extrudate from said extruder is subsequently passed through an upstream flow channel member to the inlet of a rotary melt pump, which serves to control the material thoughput rate of the process and the molten material is discharged therefrom, through a downstream flow channel member, to and through a die member.

4,461,735
HUMIDIFIER WITH WATER OVERFLOW RELIEF MECHANISM

David F. Wirt, Oak Grove Heights Township, Pierce County, Wis., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jul. 30, 1982, Ser. No. 403,712
Int. Cl.³ B01F 3/04; A61M 15/00
U.S. Cl. 261—104 5 Claims

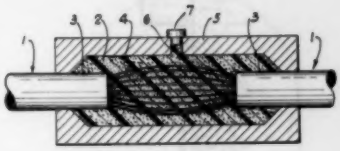


1. In a humidifier for a ventilating system comprising:
means for defining a main reservoir adapted for containing water;
a water supply tube adapted to be coupled to a source of water under pressure for conducting water to said main reservoir;
inlet float means for allowing flow of water through said supply tube when water in said main reservoir is below a first predetermined level and for normally stopping flow through said supply tube when water in said main reservoir reaches said first predetermined level;
a wick having a bottom end portion projecting into said main reservoir and an opposite end portion projecting from said main reservoir; and
means for directing a flow of air under greater than atmospheric pressure over said wick to carry away water evaporated from said wick, the improvement wherein:
said humidifier further includes means for defining an overflow reservoir comprising a housing having an outlet opening communicating between said overflow reservoir and the atmosphere in a bottom portion of said overflow reservoir;
outlet float means for sealing said outlet opening when water in said overflow reservoir is below a second predetermined level and for opening said outlet opening when water in said overflow reservoir rises above said second predetermined level; and
an overflow tube having an inlet end within said main reservoir above said first and second predetermined levels and an outlet end in said overflow reservoir;
so that should water in said main reservoir rise above said first predetermined level, it will be conducted by said overflow tube to said overflow reservoir and upon reaching said second predetermined level, will open said outlet float means and escape through said outlet opening to the atmosphere to preclude flooding of said means for directing air.

4,461,736
METHOD OF PRODUCING A DAM FOR A COMMUNICATION CABLE

Seiji Takagi, Ichihara, Japan, assignor to The Furukawa Electric Co., Ltd., Tokyo, Japan

PCT No. PCT/JP81/00088, 371 Date Dec. 14, 1981, 102(e) Date Dec. 14, 1981, PCT Pub. No. WO81/03085, PCT Pub. Date Oct. 29, 1981
PCT Filed Apr. 14, 1981, Ser. No. 336,364
Int. Cl.³ B29D 27/04
U.S. Cl. 264—46.5 8 Claims



1. A method of producing a dam for a communication cable comprising the steps of exposing transmission members by stripping the sheath of said communication cable, said cable having gaps between the component transmission members within the sheath, covering said exposed portions of said transmission members with a mold and injecting self-curing resin into said mold to cure said resin, characterized in that said self-curing resin is a resin to be cured while being foamed and is urethane which self-cures on reaction of isocyanate with a compound having reactive hydrogen and vaporizes a blowing agent of polychlorofluorocarbon with heat generated in said reaction, said resin having a cream time of 20 to 60 seconds and being foamed in said mold after having been injected into said mold and the mold capped prior to the cream time and having the pressure within the mold increased by increasing the fluidity resistance of said resin as said resin cure progresses when said resin intrudes into gaps between said transmission members within said sheath, which increasing fluidity resistance is caused by an expansion of volume of said resin during foaming whereby said resin is cured under a high pressure.

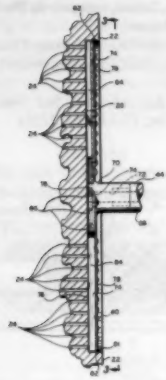
4,461,737
METHOD AND APPARATUS FOR FORMING PELLETS

Raymond G. Voss, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 9, 1983, Ser. No. 465,218
Int. Cl.³ B29C 17/14
U.S. Cl. 264—142 13 Claims

1. A method of forming thermoplastic pellets comprising:
(a) extruding at least one strand of heated thermoplastic material from the face of a die via an extrusion orifice therein beneath the surface of a quantity of liquid;
(b) cutting said strand at the face of said die with the cutting edge of a knife moving along the face of said die to form a pellet of said thermoplastic material;
(c) separating at least a portion of the face of said die from contact with the liquid in which it is submerged by direct-

ing at least one stream of gas over the face of said die adjacent said knife; and



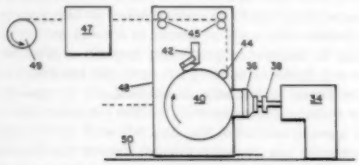
(d) cooling said thus formed pellet by contacting said pellet with said liquid.

4,461,738

METHOD OF CONTINUOUS EXTRUSION MOLDING

David B. Russell, Southborough, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Sep. 7, 1979, Ser. No. 73,341
Int. Cl.³ B29D *7/10*; B29F *3/012*
U.S. Cl. 264—145 **9 Claims**



1. A method for continuously molding plastic fastener stock of the type having elongate substantially parallel end members cross-coupled by a plurality of cross-members and from which individual fasteners including one of the cross-members may be severed, the method comprising as steps:

(a) providing a molding wheel mounted for rotation about its axis and having on its circumference mold cavities complementary in shape to the fastener stock, the portion of the cavities corresponding to the cross-members having edges at the wheel surface substantially parallel to the axis of wheel rotation,

(b) rotating the wheel past a substantially fixed orifice,

(c) extruding plastic under pressure into the cavities to fill them and form thereover a thin continuous film,

(d) and thereafter skiving the film from the plastic in the cavities at an angle to the axis of rotation of the wheel while resiliently holding the plastic in the cavities.

4,461,739

CONTINUOUS LIQUID PHASE PROCESS FOR MELT SPINNING ACRYLONITRILE POLYMER

Chi C. Young, and Francesco De Maria, both of Gulf Breeze, Fla., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jan. 13, 1983, Ser. No. 457,783
Int. Cl.³ D01F *6/00*
U.S. Cl. 264—176 F **7 Claims**

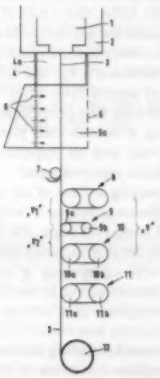
1. A process for preparing acrylonitrile polymer fiber which comprises continuously feeding a slurry of at least about 10% of fiber-forming, washed acrylonitrile polymer solids and water, said slurry also containing from about 0.0 to about 3 weight percent of a cationic surfactant, into an evaporator at a pressure of from about 30 to about 150 psig, a temperature such that said slurry is gradually formed into a single phase homogeneous melt and the water thereof is continuously evaporated therefrom to result in the reduction of water in said melt to less than about 25 weight percent, and for such a time that said polymer is not degraded, recovering a single phase homogeneous polymer melt of reduced water content and passing the same through a spinnerette assembly directly into a steam pressurized solidification zone maintained under conditions which control release of water from the nascent filaments formed to thereby prevent degradation thereof and recovering the resultant fiber.

4,461,740

PROCESS FOR SPIN-STRETCHING OF HIGH STRENGTH TECHNICAL YARNS

Gunter Koschinek, Dietzenbach; Dietmar Wandel, Hanau, and Ludger Thone, Munster, all of Fed. Rep. of Germany, assignors to Davy McKee A.G., Fed. Rep. of Germany

Continuation of Ser. No. 281,593, Jul. 9, 1981, abandoned. This application Jun. 6, 1983, Ser. No. 500,797
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1980, 3026520
Int. Cl.³ D01D *5/08*
U.S. Cl. 264—210.8 **6 Claims**



1. An improved process for producing high-tenacity, technical-grade yarns from a polymer by spin-drawing, which comprises

(a) extruding the polymer in continuous filament strands into a cooling zone;

(b) passing the filament strands over a preparation device and then over a plurality of roll systems, including feed rolls and draw rolls, the space between these rolls defining a single draw field,

said draw field being divided into two zones by at least two intermediate rolls disposed between said feed and draw rolls to provide a self-regulating, localized draw

point on said intermediate rolls, whereby all drawing of the filaments takes place on said intermediate rolls and in the zone downstream of said intermediate rolls;

(c) maintaining said feed rolls at a constant temperature of between 20° C. below and 65° C. above the glass transition point of the polymer, said feed rolls serving to heat said filaments to draw temperature;

(d) passing said filaments around said intermediate rolls not more than three turns, thereby permitting said filaments to slide over the surface of the rolls,

(e) maintaining said intermediate rolls at a temperature of between 75° C. and 215° C.;

(f) driving at least one of said intermediate rolls at a peripheral speed equal to or greater than the speed of said feed rolls, and less than the speed of said draw rolls, the speed of said draw rolls being at least 5.1 times the speed of said feed rolls;

(g) maintaining the temperature of said draw rolls at at least 160° C., but 20° C. below the melting point of the polymer;

(h) passing the filaments over a let-down roll system maintained at a temperature of at least 20° C. below the melting point of the polymer; and

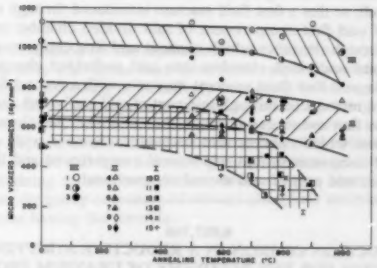
(i) winding up the filaments at a speed greater than or equal to 2,200 m/min.

4,461,741

CHROMIUM AND COBALT FREE NICKEL BASE SUPERALLOY POWDER

Kenji Okazaki, Rockaway Township, Morris County, N.J., assignor to Allied Corporation, Morris Township, Morristown, N.J.

Filed Dec. 30, 1981, Ser. No. 335,931
Int. Cl.³ C22C *19/03*
U.S. Cl. 420—460 **4 Claims**



1. A superalloy which is solidified at rates greater than about 10^5° C./sec. having a composition consisting essentially of the formula:

$$Ni_{bal}Al_aTi_bNb_cHf_dMo_eZr_fB_g$$

Where: the subscripts are the elemental additions in atomic percent and have the following values:

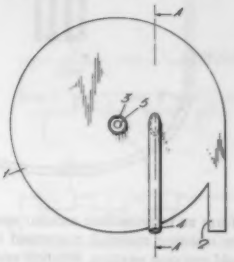
a=10–15
b=3–10
c=0–4
d=0–4
e=0–4
f=0–1
g=2–5

4,461,742

PYROLYSIS OF HYDROCARBONS

Frederick Rowe, Middlesbrough, and David Brown, Northallerton, both of England, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 196,562, Oct. 14, 1980, Pat. No. 4,349,432. This application Mar. 29, 1982, Ser. No. 362,854
Claims priority, application United Kingdom, Oct. 18, 1979, 7936152
Int. Cl.³ B01J *8/14, 12/00;* B01F *5/00*
U.S. Cl. 422—129 **4 Claims**



1. A cylindrical reaction chamber defined by upper and lower walls and a peripheral wall, said chamber having a relatively high width to depth ratio, a tangentially positioned inlet located in the peripheral wall of said chamber, an outlet from the chamber located in the center of said upper surface wall, an obliquely-angled inlet located at a point in the upper surface wall of the chamber between its center and the peripheral wall, means communicating with said tangentially positioned inlet for supplying a high velocity first fluid stream into said chamber such that the first fluid stream travels in a spiral path around the chamber towards the center of the chamber and exerts a strong centrifugal field therein, means for feeding a further fluid stream into said chamber via said obliquely-angled inlet such that the further fluid stream moves countercurrently through the first fluid stream towards the chamber periphery, the angular disposition of said inlet and the means for feeding said further fluid stream therethrough being such that the component of velocity tangential to the radius of the chamber at the point of entry of said further stream is approximately equal to that of the gas flowing in a spiral path from the tangential inlet toward the centre of the chamber and the component of velocity parallel to the axis of the cylinder being sufficient to distribute the feedstock over the full depth of the chamber.

4,461,743

OXYGEN INJECTION NOZZLE FOR WET OXIDATION REACTORS

Ajit K. Chowdhury, Schofield; Gerald L. Bauer, Rothschild, and Richard W. Lehmann, Rib Mountain, all of Wis., assignors to Sterling Drug Inc., New York, N.Y.

Filed Feb. 8, 1982, Ser. No. 346,646
Int. Cl.³ B01F *1/14*
U.S. Cl. 422—129 **5 Claims**

1. An apparatus for introducing a mixture of pure oxygen or oxygen-enriched air exceeding 25 percent oxygen and purge water into a gas-liquid reaction mixture undergoing wet oxidation at elevated temperature and pressure in a wet oxidation reactor, comprising:

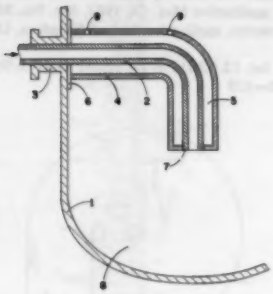
(a) a wet oxidation reactor comprised of a vertical bubble column with pressure containing walls; and

(b) an oxygen injection nozzle comprising:

a first pipe communicating with external sources of pressurized oxygen or oxygen-enriched air and purge water, said first pipe passing through said reactor wall and sealingly

connected thereto, and projecting into the interior of said reactor; and

a second pipe of larger diameter than said first pipe, annularly separated from said first pipe within the reactor



interior to form an intermediate annular space filled with heat transfer resisting material comprised of liquid from said gas-liquid reaction mixture, wherein said intermediate annular space is connectively open to said reactor interior at the upper portion of said second pipe.

4,461,744

APPARATUS FOR GENERATING OZONE BY AN ELECTRIC DISCHARGE

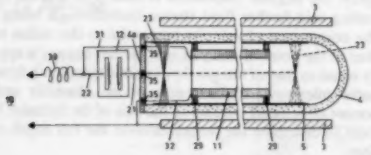
Peter Erni, Baden; Ulrich Kogelschatz, Hausen; Sigfrid Strässler, Wettingen, and Hans-Jürg Wiesmann, Seegräben, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Dec. 17, 1981, Ser. No. 331,751

Claims priority, application Switzerland, Dec. 23, 1980, 9515/80

Int. Cl.³ B01J *19/12*

U.S. Cl. 422—186.18 **6 Claims**



1. An apparatus for generating ozone by an electric discharge comprising:

a tube ozonizer having a first outer tubular electrode and a second, likewise tubular inner electrode having a dielectric layer which faces said first electrode and, between said electrodes a cylindrical discharge space, through which an oxygen-containing gas can be passed;

a supply system consisting of a high-voltage transformer which is fed by low-frequency alternating current between mains frequency and 10 kH with the secondary winding connected in parallel both to a storage capacitor and to the series connection of a spark gap and the tube ozonizer, wherein said spark gap is of plate-like, passive design and has a defined response voltage which is below the peak value of the secondary voltage of the high-voltage transformer, but above the starting voltage of the ozonizer from rest, and wherein said storage capacitor and said passive spark gap are integrated to form a unitary construction which is designed as an exchangable unit which can be slidably removably connected to said outer electrode of said ozonizer.

4,461,745

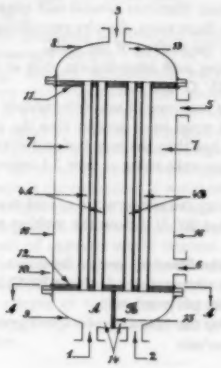
SELF REGENERATING CATALYTIC REACTOR

Ross C. Ahlstrom, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 12, 1982, Ser. No. 367,205

Int. Cl.³ B01J *8/06*

U.S. Cl. 422—197 **2 Claims**



1. A reactor of the shell and tube type comprising a plurality of tubes disposed within a shell, and fixed within said shell by attachment to a tube sheet at each of their ends, each of said tube sheets being joined continuously at its respective periphery to said shell, thereby defining a heat exchange chamber outside of said tubes and inside said shell, said shell having inlet and outlet ports positioned between said tube sheets so that a fluid exchange medium may circulate therein, said shell being closed at both ends to form chambers between said closed ends and said tube sheets, said chambers being in communication with said tubes, one of said chambers being divided by a partition into first and second compartments, the other chamber remaining undivided, each of said compartments and the undivided chamber having a port therein through the closed end of said shell, so that a first fluid reactant introduced through said port of said first compartment of said divided chamber may pass through the tubes which connect said first compartment with said undivided chamber into said undivided chamber, wherein said first fluid reactant may mix with a second fluid reactant introduced through said port of said undivided chamber, said first and second reactants thereafter may pass through the tubes which connect said undivided chamber with said second compartment into said second compartment and then may exit said port of said second compartment.

4,461,746

REDUCTION OF IRON IN A REDUCTIVE STRIPPING PROCESS FOR THE RECOVERY OF URANIUM FROM WET PROCESS PHOSPHORIC ACID

Laurence W. Bierman, and Samual M. Polinsky, both of Pocatello, Id., assignors to J. R. Simplot Co., Boise, Id.

Filed Feb. 16, 1982, Ser. No. 349,026

Int. Cl.³ C01G *43/00*

U.S. Cl. 423—8 **7 Claims**

1. A reductive stripping process for the recovery of uranium from wet process phosphoric acid, comprising the steps of:

providing oxidized wet-process phosphoric acid having a dilute concentration of uranyl ions and ferric ions therein;

extracting a portion of the uranyl ions in the oxidized wet-process phosphoric acid into an extraction medium, thereby producing a raffinate phosphoric acid depleted in uranium but having a dilute concentration of ferric ions;

reacting a portion of said raffinate phosphoric acid with a pressurized reducing gas to reduce the ferric ions therein

to the ferrous state to produce a reducing solution having a ferrous ion concentration sufficient to strip uranyl ions from said extraction medium;

stripping uranyl ions from said extraction medium with said reducing solution to produce a uranium-enhanced reductive strip solution suitable for further processing to remove uranium; and

further processing said uranium-enhanced reductive strip solution into a uranium oxide product.

4,461,747

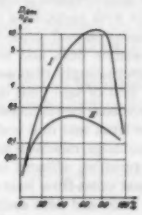
METHOD FOR SEPARATING ACTINIDES FROM LANTHANIDES IN AN ACIDIC AQUEOUS SOLUTION

Richard Fitoussi, Paris; Claude Musikas, Bures sur Yvette, and Hubert Ranarivelo, Paris, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 13, 1982, Ser. No. 339,077

Int. Cl.³ C01G *56/00, 57/00;* C22B *60/02*

U.S. Cl. 423—10 5 Claims



1. A method for the separation of actinides from lanthanides present in a trivalent state in an acidic aqueous solution, said method consisting in selectively extracting in an organic solvent the actinides present in said solution, by bringing said aqueous solution into contact with an organic solvent comprising a system of extractants constituted by a dialkyl dithiophosphoric acid and by a neutral organo-phosphorated compound containing at least one electron-doner oxygen atom selected from the group consisting of tributyl phosphate and phosphine oxides having the formula:

in which radicals R_1, R_2 and R_3, either identical or different, represent an alkyl radical, an alkoxyalkyl radical or an aryl radical.

2. A method according to claim 1, wherein said dialkyl dithiophosphoric acid is di-2-ethylhexyldithiophosphoric acid.

3. A method according to claim 1, wherein said phosphine oxide is trioctylphosphine oxide.

4. A method according to claim 1, wherein said phosphine oxide is di-n-hexyl-octyloxymethylphosphine oxide.

4,461,748

LIQUID-LIQUID EXTRACTION OF RARE EARTH/URANIUM/THORIUM VALUES

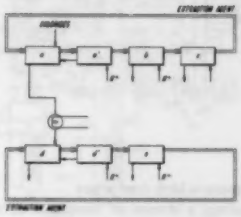
Jean-Louis Sabot, Maisons Laffitte, and Alain Leveque, Paris, both of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Oct. 25, 1982, Ser. No. 436,353

Claims priority, application France, Oct. 30, 1981, 81 20385

Int. Cl.³ C01G *43/00;* C01F *17/00, 15/00*

U.S. Cl. 423—10 31 Claims



1. A process for the separation and recovery of rare earth, uranium and thorium values from an aqueous solution of the chlorides thereof, said aqueous solution having an acidity of less than 2 N and a concentration in such values, expressed as the oxides thereof, of at least 50 g/l, comprising liquid-liquid extracting said aqueous solution with an organic extractant comprising at least one neutral organophosphorus compound, said at least one neutral organophosphorus compound being a phosphonate, phosphinate, or phosphine oxide when thorium is extracted by said organic extractant, and said at least one neutral organophosphorus compound being a phosphate, phosphonate, phosphinate or phosphine oxide when thorium is to remain in aqueous solution.

4,461,749

PROCESSING ACID GASES

Frank H. Thorn, deceased, late of Bartlesville, Okla. (by Betty H. Dalrymple, executor), assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 21, 1983, Ser. No. 477,473

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—228 6 Claims

1. In a process comprising

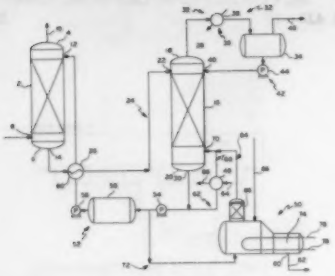
(a) contacting a first gas stream containing at least one acid gas selected from the group consisting of CO_2 and H_2S with an amine solution in a contacting zone;

(b) withdrawing from the contacting zone a rich solution of the amine which is rich in the acid gas from the first gas stream;

(c) introducing the rich solution into a stripping zone to produce a second gas stream containing the at least one acid gas and water vapor and a lean amine solution which is lean in the acid gas;

(d) circulating a first portion of the lean amine solution to the contacting zone; and

(e) circulating a second portion of the lean amine solution to a distillation zone to provide a third gas stream which contains predominantly water and amine and a liquid bottoms stream which contains solids;



the improvement which comprises

(f) introducing a stream of dissolved or suspended solids containing make-up water into the distillation zone, solids of the make-up water being withdrawn from the distillation zone in the liquid bottoms stream.

4,461,750

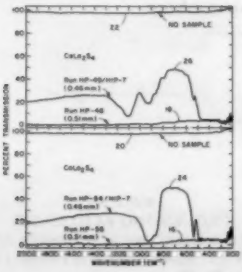
INFRARED WINDOW MATERIALS AND THEIR FABRICATION

Daniel L. Chess, and William B. White, both of State College, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 23, 1982, Ser. No. 410,788

Int. Cl.³ C01F *17/00*

U.S. Cl. 423—263 **12 Claims**



7. A process for densifying to the theoretical limit ternary alkaline earth-rare earth sulfides represented by MLn_2S_4, wherein M, Ln and S representing alkaline earth, light lanthanide and sulfide ions respectively, which includes the steps of:

obtaining said ternary alkaline earth-rare earth sulfides by reacting carbonates of the alkaline earth elements with oxides of lanthanide elements in an atmosphere of flowing hydrogen sulfide;

hot pressing said ternary alkaline earth-rare earth sulfides for densification thereof; and

hot-isostatic pressing the densified ternary alkaline earth-rare earth sulfides resulting from said step of hot-pressing for further densification thereof.

4,461,751

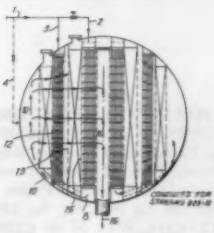
PROCESSES FOR CARRYING OUT CATALYTIC ENDOTHERMIC HIGH-PRESSURE GAS REACTIONS

John V. Albano, Oradell, and George Friedman, Clark, both of N.J., assignors to Lummus Crest Inc., Bloomfield, N.J.

Continuation of Ser. No. 285,229, Jul. 20, 1981, abandoned, which is a division of Ser. No. 130,895, Mar. 17, 1980, abandoned, which is a division of Ser. No. 41,378, May 22, 1979, Pat. No. 4,341,737. This application Apr. 20, 1983, Ser. No. 486,929

Int. Cl.³ C01C *3/02*

U.S. Cl. 423—372 **1 Claim**



1. A process for producing hydrocyanic acid in the gaseous phase, which comprises introducing hydrocyanic synthesis gas into a heat exchange means; passing the resultant synthesis gas into a reactor having a single-walled pressure shell, a plurality of annular catalyst beds with particulate catalyst in each bed, and a plurality of annular-shaped cross-flow heat exchange means, said annular catalyst beds and said annular heat exchange means being alternatingly disposed; passing said synthesis gas through the first of said beds in a radially outward direction toward the pressure containment walls of said reactor; passing the effluent from said first bed through the first of said cross-flow heat exchange means in said radially outward direction; passing the resulting effluent successively through the next bed and the next cross-flow heat exchange means for each of the remaining beds and heat exchange means in said radially outward direction, each cross-flow heat exchange means providing inter-stage feed-effluent heat exchange, the shell-side fluid of said heat exchange means flowing radially outwardly in a direction substantially normal to the direction in which the tube-side fluid flows; and recovering a gas which is enriched in hydrocyanic acid.

4,461,752

PROCESS FOR THE PRODUCTION OF HYDROGEN CYANIDE

Yutaka Sasaki, and Hiroshi Utsumi, both of Kanagawa, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1983, Ser. No. 468,528

Claims priority, application Japan, Feb. 22, 1982, 57-25895

Int. Cl.³ C01C *3/02*

U.S. Cl. 423—376 **14 Claims**

1. A process for the production of hydrogen cyanide by vapor phase catalytic ammoxidation of methanol at temperatures in the range of 350° C. to 500° C., comprising performing said ammoxidation reaction in the presence of a catalyst represented by the following empirical formula:

$$Fe_aCu_bSb_cMo_dMe_eTe_fQ_gO_h(SiO_2)_i$$

wherein

Me is at least one element selected from the group consisting of V and W;

Q is at least one element selected from the group consisting of Mg, Zn, La, Ce, Al, Cr, Mn, Co, Ni, Bi, U, and Sn; and

the symbols a through i each represents an atomic ratio,

a=10,

b=0.5 to 5,
c=12 to 30,
d=0 to 15,
e=0 to 3,
f=0 to 5,
g=0 to 6,
h=the number of oxygen atoms as determined depending on the oxide formed by combining the above-described components, and
i=25 to 200.

4,461,753

PROCESS FOR PRODUCING PHOTOCONDUCTIVE CADMIUM SULFIDE

Kiyoshi Suzuki, Yokohama, and Fumio Sumino, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 1, 1982, Ser. No. 364,606
Claims priority, application Japan, Apr. 15, 1981, 56-56573; Apr. 15, 1981, 56-56574
Int. Cl.³ B01J *13/00*; C01B *19/00*; G03G *5/04*
U.S. Cl. 423—561 B **3 Claims**

1. Process for producing photoconductive cadmium sulfide comprising:

(a) introducing hydrogen sulfide into an aqueous solution containing from about 0.01 to 0.15 mole/l of cadmium ion and from about 0 to 0.2N of sulfuric acid to produce a cadmium sulfide reaction mixture;

(b) adding additional cadmium ion and sulfuric acid to said reaction mixture in concentrations higher than that of step (a); and

(c) introducing additional hydrogen sulfide into said reaction mixture to thereby form cadmium sulfide of a desired particle size.

4,461,754

METHOD OF REMOVING HYDROGEN SULFIDE FROM GASES UTILIZING A STABILIZED CHELATE SOLUTION

Zaida Diaz, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 324,360, Nov. 24, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 430,531
Int. Cl.³ C01B *17/04*; B01D *53/34*
U.S. Cl. 423—573 R **20 Claims**

1. A process for the removal of H_2S from a sour gaseous stream comprising:

(a) contacting the sour gaseous stream in a contacting zone with an aqueous reaction solution at a temperature below the melting point of sulfur, the solution containing an effective amount of a reactant selected from the group consisting of oxidizing polyvalent metal chelate compounds, and mixtures thereof, and a stabilizing amount of a composition selected from the group consisting of 2,2-thiodiethanol, zinc isopropylxanthate, and mixtures thereof, and producing a sweet gas stream and an aqueous admixture containing crystalline sulfur and a reduced reactant;

(b) removing at least a portion of the crystalline sulfur from the aqueous admixture;

(c) regenerating the aqueous admixture in a regeneration zone to produce a regenerated reactant;

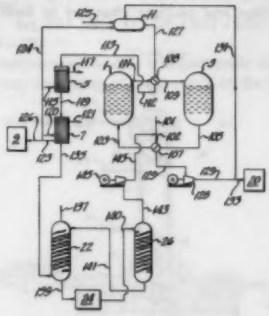
(d) returning aqueous admixture containing regenerated reactant from the regeneration zone to the contacting zone.

4,461,755

PROCESS FOR PRODUCING HYDROGEN AND SULFUR FROM HYDROGEN SULFIDE

William D. Daley, Morristown, and Robert D. Young, Whitehouse Station, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jul. 14, 1983, Ser. No. 513,554
Int. Cl.³ C01B *3/04, 17/04*
U.S. Cl. 423—573 G **19 Claims**



1. A continuous process for the production of hydrogen and sulfur from hydrogen sulfide wherein said process comprises:

a. introducing a gas feed containing hydrogen sulfide into a first reaction chamber containing a refractory material preheated to a first peak temperature between about 982° C. and about 1816° C. to produce a first vapor stream comprising hydrogen, sulfur and hydrogen sulfide, wherein heat is desorbed from said refractory material;

b. heating a second reaction chamber containing a refractory material to a first peak temperature between about 982° C. and about 1816° C. simultaneously with step a by combusting an oxidizable material in an oxygen containing gas to produce hot gases that are introduced into said second reaction chamber to thereby heat said second reaction chamber, wherein heat is absorbed by said refractory material;

c. cooling said first vapor stream to recover energy and condense elemental sulfur from said first vapor stream and to produce a second vapor stream comprising hydrogen and hydrogen sulfide;

d. separating said second vapor stream into a hydrogen-containing stream and a stream comprising hydrogen sulfide; and

e. periodically alternating said heat desorbing step a and said heat absorbing step b between said first and said second reaction chambers, thereby subjecting said first and said second reaction chambers to periodically alternating heat absorbing and desorbing cycles; wherein said heat desorbing step a and said heat absorbing step b alternate between said first and said second reaction chambers when the first peak temperature in the reaction chamber undergoing heat desorption declines to a second peak temperature that is about 1° C. to about 300° C. below said first peak temperature.

4,461,756

SINGLET DELTA OXYGEN GENERATOR

John D. Rockenfeller, Grand Island, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 30, 1982, Ser. No. 431,436
Int. Cl.³ C01B *13/00*
U.S. Cl. 423—579 **4 Claims**

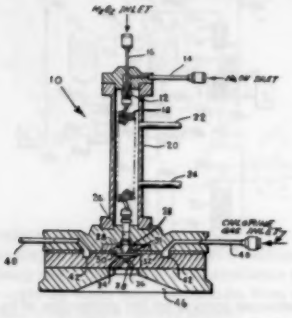
1. A method for preparing molecular oxygen in the excited

singlet delta electronic state for use as an energizing reactant for chemical lasers which comprises the steps of:

(a) introducing a flow of hydrogen peroxide and sodium hydroxide reactants into a flowing reactor;

(b) mixing the said reactants at a pressure greater than one atmosphere to effect a reaction therebetween and form an intermediate reaction product, and cooling and removing the heat from said reaction at said pressure;

(c) passing said intermediate reaction product through a sonic orifice and swirling chamber to form a swirling



droplet spray of said intermediate reaction product while simultaneously introducting chlorine into said swirling droplet spray to effect a reaction therebetween and produce excited molecular oxygen;

(d) desorbing said excited molecular oxygen in a vacuum chamber downstream of the said sonic orifice and swirling chamber;

(e) removing any entrained liquid water droplets and water vapor from said excited molecular oxygen; and

(f) removing and storing the resulting excited molecular oxygen.

4,461,757

DIMETHYLAMINOMETHYLENATED ANTI-HERPES COMPOUNDS

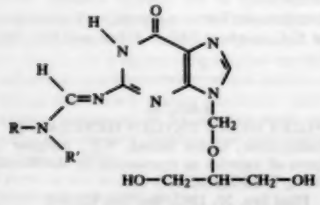
Kelvin K. Ogilvie, Candiac, Canada, assignor to ens Bio Logicals Inc., Toronto, Canada

Filed Feb. 23, 1983, Ser. No. 468,877

Int. Cl.³ A61K *31/52;* **C07D** *473/18*

U.S. Cl. 424—085 **10 Claims**

1. The compound 2-(N,N-dialkylaminomethylene)-9-[[2-hydroxy-1-(hydroxymethyl)ethoxy]methyl]guanine of the formula:



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and its pharmaceutically acceptable salts wherein R and R' each represent an independently selected lower alkyl group of 1–4 carbon atoms.

4,461,758

INSECTICIDE INCLUDING POWDERED BORIC ACID

Alan D. Brite, 11232 Homedale St., Los Angeles, Calif. 90049

Continuation-in-part of Ser. No. 870,740, Jan. 19, 1978, abandoned. This application Mar. 29, 1979, Ser. No. 24,962

Int. Cl.³ A01N *59/14;* **G01N** *31/00, 31/22, 33/48*

U.S. Cl. 424—10 **3 Claims**

1. An insecticidal composition comprising a mixture of at least 95% by weight powdered boric acid, about 5% by weight of a member selected from the group consisting of silica gel, tricalcium phosphate and magnesium sterate, about 1% by weight of denatonium benzoate or sucrose octa-acetate and about 1% by weight of a powdered white pigment.

4,461,759

CONSTANT RELEASE RATE SOLID ORAL DOSAGE FORMULATIONS OF VEROPAMIL

James M. Dunn, Littleton, Colo., assignor to Verex Laboratories, Inc., Englewood, Colo.

Filed Jan. 3, 1983, Ser. No. 455,192

Int. Cl.³ A61K *9/22, 9/26*

U.S. Cl. 424—19 **15 Claims**

1. A constant order release rate solid oral dosage formulation of verapamil or a pharmaceutically acceptable salt thereof, said formulation comprising: a therapeutically effective amount of verapamil or a pharmaceutically acceptable salt thereof; from about 0.5 to 6.0 weight percent of microcrystalline cellulose alone or with one or more acid-retardant, hydrophobic cellulose derivatives selected from the group consisting of cellulose acetate phthalate, hydroxypropylmethyl cellulose phthalate, and ethyl cellulose; from about 2.5 to 35 weight percent of a hydrogenated vegetable oil; from about 1 to 20 weight percent of carboxypolymethylene, a pharmaceutically acceptable acrylic acid polymer; from about 0.5 to 4.0 weight percent of fumed silicon dioxide and from about 0.4 to 3.0 percent of a tableting lubricant.

4,461,760

ANTICANCER DRUGS

Nobuhiko Sugano, Toyama; Chiyokichi Iizuka, Noda, and Hiroaki Maeda, Chiba, all of Japan, assignors to Noda Shokukin Kogyo Co., Ltd., Chiba, Japan

Filed Jul. 8, 1982, Ser. No. 396,294

Claims priority, application Japan, Dec. 29, 1981, 56-214299

Int. Cl.³ A61K *37/02;* **C12P** *21/00, 1/02, 19/02*

U.S. Cl. 424—177 **5 Claims**

1. A composition for treatment of cancer by intraperitoneal or oral administration, consisting of sugar and protein extract, wherein the principal sugar is xylose, obtained from the nutrient- and tissue-medium of *Lentinous edodes,* the method comprising the steps of:

(A) culturing the mycelia of *Lentinus edodes* in a solid medium primarily composed of a xylose-rich bagasse,

(B) crushing the mixture of nutrient- and tissue-medium of the mycelia of *Lentinus edodes* and, after adding 5 liters of water per 800 grams of crushed material at a pH of 3 to 8, blending and stirring the nutrient medium and tissue medium at a temperature of from 40° to 60° C.,

(C) compressing, filtering and sterilizing the suspension obtained from Step B,

(D) freeze-drying the filtrate from Step C to form a powder called LEM,

(E) dissolving the LEM powder in water and then precipitating a powder, using a four-fold volume of ethyl alcohol, washing the precipitate with an 80% ethyl alcohol solution, and then centrifuging and freeze-drying the resulting material to obtain a powder, called LAP, and

(F) fractionating the LAP obtained from Step E by column chromatography on Sephalose to obtain LAP-1 and LAP-2.

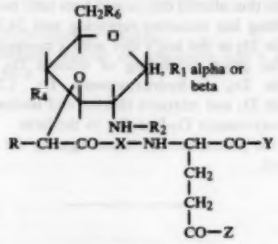
4,461,761

OLIGOMERS OF COMPOUNDS OF THE MURAMYL-PEPTIDE TYPE AND MEDICAMENTS CONTAINING THEM

Pierre Lefrancier, Bures sur Yvette; Monique Parant, Paris; Francoise Audibert, Neuilly sur Seine; Edgar Sache, Bures sur Yvette; Louis Chedid; Jean Choay, both of Paris, and Edgar Lederer, Sceaux, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), NeuillysurSeine, France

Continuation of Ser. No. 268,500, May 29, 1981, abandoned, which is a continuation of Ser. No. 44,672, Jun. 1, 1979, abandoned. This application Aug. 23, 1982, Ser. No. 410,727
Claims priority, application France, Jun. 5, 1978, 78 16792
Int. Cl.³ A61K *37/00*; C07C *103/52*
U.S. Cl. 424—177 7 Claims

1. A water soluble oligomer free of N-acetyl-glucosamine units which oligomer is a non-specific immuno-specific immunostimulant which is virtually non-immunogenic and comprises at least two to ten muramyl peptide monomer units linked to each other directly or through a coupling group, said monomer units having the formula



in which

R is hydrogen or methyl,

R_1 is —HN_2, —OH, aminoethoxy para-aminophenyloxy or glutaraldehyde,

R_2 is hydrogen or acetyl,

R_4 is hydroxyl,

R_6 is —NH_2, —OH, acetyl or succinyl,

X is L-alanyl, L-seryl, L-threonyl, L-prolyl, L-valyl or glycyl,

Y is —OH, methoxy, ethoxy or proproxy, and Z being a linking group which links the mimmer units and which comprises hydroxyl, amino, or lysyl.

4,461,762

SYNTHETIC COMPOUNDS TO INHIBIT INTESTINAL ABSORPTION OF CHOLESTEROL IN THE TREATMENT OF HYPERCHOLESTEROLEMIA

M. R. Malinow, Portland, Oreg., assignor to Medical Research Foundation of Oregon, Portland, Oreg.

Filed May 17, 1982, Ser. No. 379,098
Int. Cl.³ A01N *31/00*; A61K *31/705, 31/58, 31/56*
U.S. Cl. 424—182 15 Claims

1. A method of treating a human or other warm-blooded animal subject to reduce digestive absorption of cholesterol, the method comprising administering an effective amount of a nontoxic, substantially pure, synthetic glycosidic compound selected from the group consisting of glycosides having tigogenin aglycones, glycosides having diosgenin aglycones, and mixtures thereof to the subject.

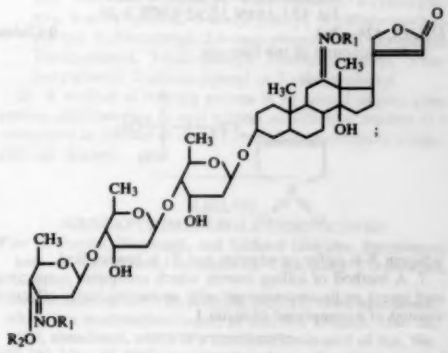
4,461,763

OXIMES OF 3'''-DEHYDROCARDENOLIDE TRIDIGITOXOSIDES

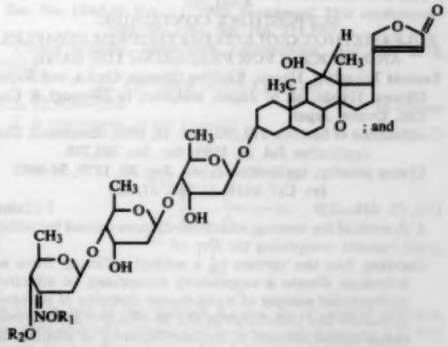
Wolfgang Schaumann, Heidelberg; Fritz Kaiser, Lampertheim; Wolfgang Voigtländer, Weinheim; Edgar Hoyer, Mannheim, and Peter Neubert, Weinheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Nov. 5, 1982, Ser. No. 439,654
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1981, 3146898
Int. Cl.³ A61J *31/705*; C07J *19/00*
U.S. Cl. 424—182 19 Claims

1. A 3'''-dehydrocardenolide tridigitoxoside oxime selected from the group consisting of compounds of the formula:



and



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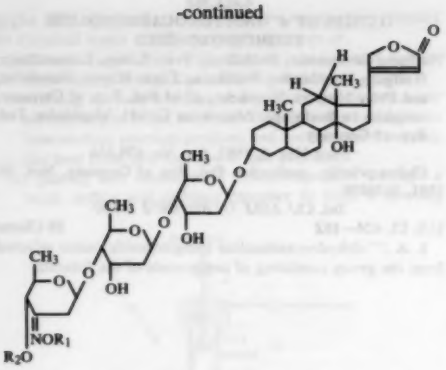


in which R_1 is a hydrogen or an alkyl radical containing up to 3 carbon atoms, and R_2 is a hydrogen atom or a lower carboxylic acyl or alkyl radical of up to 3 carbon atoms.

17. Pharmaceutical composition for treating cardiac insufficiency consisting of a cadiotonic effective amount of at least one oxime according to claim 1, in admixture with a pharmaceutical diluent or carrier.

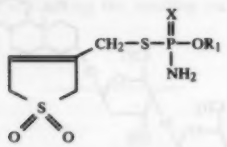
4,461,764

PESTICIDAL PHOSPHORYL- AND PHOSPHINYL-THIOALKYL CYCLIC SUFONES

Philip S. Magee, Vallejo, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 22, 1982, Ser. No. 421,178
Int. Cl.³ A01N *57/32*; C07F *9/24*
U.S. Cl. 424—202 **9 Claims**

1. A compound of the formula:



wherein X is sulfur or oxygen; and R_1 is lower alkyl.

7. A method of killing insects which comprises contacting said insect or its environment with an insecticidally effective amount of a compound of claim 1.

4,461,765

SUPPOSITORY CONTAINING SULFAMETHOXAZOLE/TRIMETHOPRIM COMPLEX AND PROCESS FOR PREPARING THE SAME

Yasushi Takagishi, Hyogo; Kiichiro Ohsuga, Osaka, and Sadao Ohama, Hyogo, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Continuation of Ser. No. 112,293, Jan. 15, 1980, abandoned. This application Jul. 31, 1981, Ser. No. 288,795
Claims priority, application Japan, Jan. 30, 1979, 54-9992
Int. Cl.³ A61K *31/505, 31/625*
U.S. Cl. 424—229 **3 Claims**

1. A method for treating infectious diseases caused by pathogenic bacteria comprising the step of:

inserting into the rectum of a subject suffering from an infectious disease a suppository comprising an effective antibacterial amount of a one-to-one complex of sulfamethoxazole and trimethoprim and an effective antibacterial supplemental amount of sulfamethoxazole in addition to the complex in a pharmaceutically acceptable carrier which is in solid form at room temperature but which melts rapidly in human coleomic ducts in a unit dosage form suitable for rectal administration to thereby achieve increased absorption of the active ingredients.

4,461,766

METHOD FOR INDUCING MOLTING IN LAYING HENS

Hector F. DeLuca; Heinrich K. Schnoes, and Leslie E. Hart, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Mar. 28, 1983, Ser. No. 479,293
Int. Cl.³ A61K *31/59*
U.S. Cl. 424—236 **3 Claims**

2. A method for extending the productive lives of egg-laying hens which comprises, in sequence,

replacing the vitamin D compound in the normal diet of the hens with 24,25-dihydroxyvitamin D_3 in an amount sufficient to insure that the hens will receive from about 2 to about 1000 micrograms of said 24,25-dihydroxyvitamin D_3 per day

feeding the thus altered diet to said hens until molting occurs

after molting has occurred replacing said 24,25-dihydroxyvitamin D_3 in the hen's diet with a compound selected from the group consisting of vitamin D_3, 25-hydroxyvitamin D_3, 1α-hydroxyvitamin D_3, 1,25-dihydroxyvitamin D_3 and mixtures thereof and feeding the 24,25-dihydroxyvitamin D_3-free diet to the hens

whereby the production of normal eggs by the hens is reestablished.

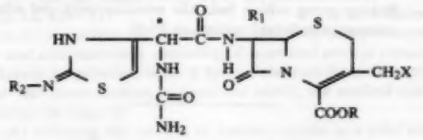
4,461,767

IMINOTHIAZOLYL UREIDO CEPHALOSPORINS

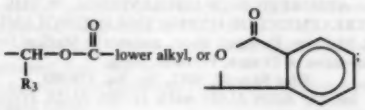
Hermann Breuer; Uwe D. Treuner, and Theodor Denzel, all of Regensburg, Fed. Rep. of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 916,380, Jun. 16, 1978, abandoned. This application Jun. 6, 1979, Ser. No. 46,068
Int. Cl.³ A61K *31/545*; C07D *501/56*
U.S. Cl. 424—246 **22 Claims**

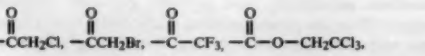
1. A compound of the formula



including its amino tautomer form wherein R is hydrogen, sodium, potassium, —CH_2—O—lower alkyl,



R_1 is in the α-configuration and is hydrogen or methoxy; R_2 is hydrogen,



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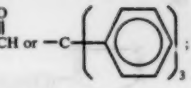
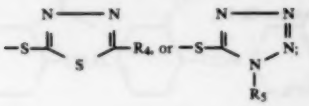
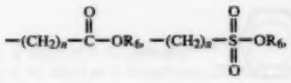


R_3 is hydrogen or lower alkyl; X is



R_4 is hydrogen of lower alkyl; R_5 is hydrogen, lower alkyl,



or $-(CH_2)_n-N-$(lower alkyl)$_2$;

R_6 is hydrogen, sodium or potassium; and n is an integer from 1 to 4.

4,461,768

ANTI-INFLAMMATORY 1,2-BENZOTHIAZINES

Ernani Dell'Acqua; Tiberio Bruzzese, and Lorenzo Ferrari, all of Milan, Italy, assignors to SPA Società Prodotti Antibiotici S.p.A., Milan, Italy

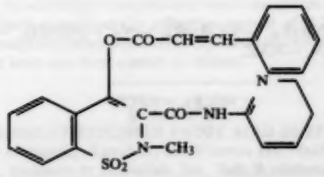
Filed Nov. 4, 1982, Ser. No. 439,272

Claims priority, application Italy, Nov. 12, 1981, 24993 A/81

Int. Cl.³ C07D *417/12*; A61K *31/54*

U.S. Cl. 424—246 **2 Claims**

1. A product, which is N-(2-pyridyl)-2-methyl-4-cinnamoiloxy-2H-1,2-benzothiazine-3-carboxamido 1,1 dioxide, corresponding to the following formula (I):



(I)

2. Pharmaceutical compositions with anti-inflammatory, analgesic, antipiretic activity which contain a therapeutically effective amount of the product of formula I, according to claim 1, in admixture with a suitable pharmaceutically acceptable carrier thereof.

4,461,769

NITROGEN BRIDGEHEAD COMPOUNDS HAVING ANTI-ALLERGIC EFFECT

Istvan Hermecz; Zoltan Meszaros; Tibor Breining; Sandor Virag; Lelle Vasvari nèe Debreczy; Agnes Horvath; Gabor Nagy; Attila Mandi; Tamas Szucs; Istvan Bitter, and Gyula Sebestyen, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

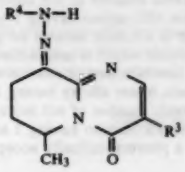
Continuation-in-part of Ser. No. 967,958, Dec. 11, 1978. This application Sep. 19, 1979, Ser. No. 76,811

Claims priority, application Hungary, Dec. 29, 1977, CI 1794

Int. Cl.³ A61K *31/505*; C07D *471/04*

U.S. Cl. 424—251 **23 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable salt, hydrate, stereoisomer, optically active isomer, geometric isomer or tautometric form thereof, wherein:

R^3 is hydrogen, carboxyl, lower alkoxycarbonyl, or a group of the formula $(-CH_2)_m-COOH$ or $-(CH_2)_m-COO-$lower alkyl wherein m is 1, 2 or 3; and

R^4 is phenyl, 4-phenyl-phenyl, 4-phenoxy-phenyl, 2-naphthyl, 3-carboxy-2-naphthyl, 4-ethyl-phenyl, 4-cyano-phenyl, 2-acetyl-phenyl, 3-acetyl-phenyl, 4-trifluoromethyl-phenyl, 2-chloropenyl, 2-bromo-phenyl, 3-bromo-phenyl, 2-iodo-phenyl, 3-iodo-phenyl, 2-carboxy-phenyl, 3-carboxy-phenyl, 2-ethoxy-phenyl or 3-ethoxy-phenyl.

23. A method of treating asthma in an animal subject comprising administering to said subject an effective amount of a compound as defined in claim 1 or a pharmaceutically acceptable salt thereof.

4,461,770

MERCAPTOIMIDAZOLE DERIVATIVES

Pier G. Ferrini, Binningen, and Richard Göschke, Bottmingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

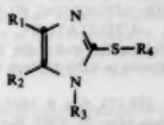
Continuation of Ser. No. 200,880, Oct. 27, 1980, abandoned, which is a continuation-in-part of Ser. No. 134,802, Mar. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 025,310, Mar. 30, 1979, abandoned, and a continuation-in-part of Ser. No. 186,038, Sep. 11, 1980, abandoned. This application Nov. 16, 1981, Ser. No. 321,840

Claims priority, application Luxembourg, Apr. 11, 1978, 79412

Int. Cl.³ A61K *31/44*; C07D *401/04*

U.S. Cl. 424—263 **16 Claims**

1. A compound of the formula



in which one of the radicals R_1 and R_2 is pyridyl which is unsubstituted of C-substituted by lower alkyl having 1 to 4 C atoms, lower alkoxy having 1 to 4 C atoms, halogen having an atomic number of not more than 35, nitro, amino or N,N-di-

lower alkylamino having 1 to 4 C atoms in each alkyl moiety and the other is phenyl which is unsubstituted or substituted by lower alkyl having 1 to 4 C atoms, lower alkoxy having 1 to 4 C atoms, halogen having an atomic number of not more than 35, nitro, amino or N,N-di-lower alkylamino having 1 to 4 C atoms in each alkyl moiety, R_3 is hydrogen or lower alkyl having 1 to 4 C atoms, and R_4 is lower alkyl having 1 to 7 C atoms which is unsubstituted or substituted by phenyl which is unsubstituted or substituted by lower alkyl having 1 to 4 C atoms, lower alkoxy having 1 to 4 C atoms, halogen having an atomic number of not more than 35, nitro, amino or N,N-di-lower alkylamino having 1 to 4 C atoms in each alkyl moiety or, in a position higher than the a-position, by lower alkoxy or lower alkylthio having 1 to 4 C atoms, or by a phenoxy or phenylthio radical which is unsubstituted or substituted by lower alkyl having 1 to 4 C atoms, lower alkoxy having 1 to 4 C atoms, halogen having an atomic number of not more than 35, nitro, amino or N,N-di-lower alklyamino having 1 to 4 C atoms in each alkyl moiety, or is a lower alkenyl or lower alkynyl radical having 2 to 4 C atoms which is unsubstituted or substituted by phenyl which is unsubstituted or substituted by lower alkyl having 1 to 4 C atoms, lower alkoxy having 1 to 4 C atoms, halogen having an atomic number of not more than 35, nitro, amino or N,N-di-lower alkylamino having 1 to 4 C atoms in each alkyl moiety, or a pharmaceutically acceptable acid addition salt thereof.

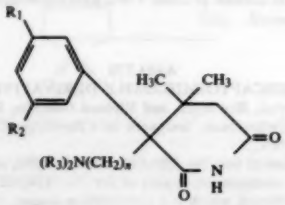
4,461,771

TREATMENT OF MIGRAINE WITH DIOXOPIPERIDINE DERIVATIVES

Maurice W. Gittos, 16 Rue Andre Malraux, Plobsheim Illkirch-Graffenstaden 67400, France, and David A. Amey, 40 S. Rd., Luton, Bedfordshire LU1 3UD, England

Filed Mar. 1, 1983, Ser. No. 471,099
Int. Cl.³ A61V *31/445*
U.S. Cl. 424—267 **9 Claims**

1. A method of prophylaxis of migraine which comprises administering to a patient suffering from migraine, an effective migraine-prophylactic amount of a compound of the following general Formula I:



wherein:

R_1 represents methoxy, ethoxy and hydroxy;

R_2 represents methoxy, ethoxy, hydroxy or hydrogen, each R_3 independently represents methyl or ethyl; and

n represents 2 or 3, or a pharmaceutically acceptable acid addition salt thereof.

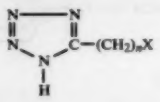
4,461,772

ADDITIVES FOR IMPROVING RUMINANT FEED UTILIZATION

Paul E. Marecki, Painesville, and John M. Weaver, Mentor, both of Ohio, assignors to SDS Biotech Corporation, Painesville, Ohio

Division of Ser. No. 185,171, Sep. 8, 1980, Pat. No. 4,423,224. This application Mar. 21, 1983, Ser. No. 477,236
Int. Cl.³ A61K *31/41, 31/275*
U.S. Cl. 424—269 **20 Claims**

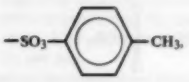
1. An animal feed composition for increasing the efficiency of feed utilization by ruminant animals comprising an animal feed containing a feedstuff additive and an effective amount of at least one compound defined by one of the following formulae:



I.

where X represents Cl, Br,

$NHSO_2CH_3$,



or $—SCH_3$, and n is 1 or 2; and

$CH_3SO_2NHCH_2CH_2CN$ (II)

to increase the efficiency of food utilization by the animal.

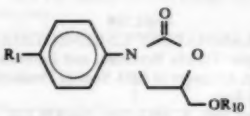
4,461,773

P-OXOOXAZOLIDINYLBENZENE COMPOUNDS AS ANTIBACTERIAL AGENTS

Walter A. Gregory, Wilmington, Del., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 417,569, Sep. 15, 1982, abandoned, which is a continuation-in-part of Ser. No. 327,583, Dec. 4, 1981, abandoned. This application Jan. 5, 1984, Ser. No. 567,411
Int. Cl.³ C07D *263/22;* A61K *31/42*
U.S. Cl. 424—272 **28 Claims**

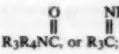
1. A compound of Formula I



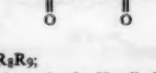
(I)

wherein, for the l, and mixtures of the d and l stereoisomers of the compound,

R_1 is R_2SO_2,



R_2 is $—NR_3R_4$, $—N(OR_3)R_4$, $—N_3$, $—NHNH_2$, $—NX_2$, $—NR_6X$, $—NXZ$,



or $—N{=}S(O)_nR_8R_9$;

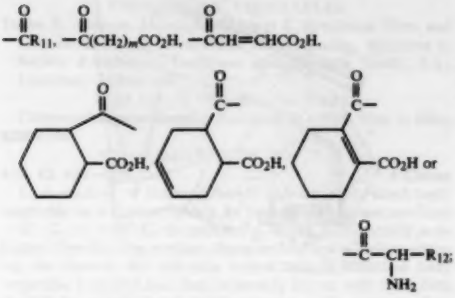
R_3 and R_4 are independently H, alkyl of 1–4 carbons or cycloalkyl of 3–8 carbons;

R_5 is NR_3R_4 or OR_3;

R_6 is alkyl of 1–4 carbons;

R_7 is alkyl of 1–4 carbons, optionally substituted with one or more halogens;

R_8 and R_9 are independently alkyl of 1–4 carbons or, taken together are $-(CH_2)_p-$;
R_{10} is H, alkyl of 1–3 carbons,



R_{11} is alkyl of 1–12 carbons;
R_{12} is H, alkyl of 1–5 carbons, CH_2OH or CH_2SH;
X is Cl, Br or I;
Z is a physiologically acceptable cation;
m is 2 or 3;
n is 0 or 1; and
p is 3, 4 or 5;
and when R_{10} is alkyl of 1–3 carbons, R_1 can also be $CH_3S(O)_q$ where q is 0, 1 or 2; or a pharmaceutically acceptable salt thereof.

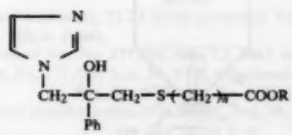
4,461,774

ANTIFUNGAL IMIDAZOLYLCARBOXYLIC ACIDS AND THEIR DERIVATIVES

Ikutaro Saji; Hiroshi Yamazaki; Shunji Aono, all of Osaka; Katsuaki Ichise, Kyoto, and Takao Okuda, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 29, 1982, Ser. No. 427,558
Claims priority, application Japan, Oct. 9, 1981, 56-161413
Int. Cl.³ A01N *43/50;* **C07D** *233/60*
U.S. Cl. 424—273 R **13 Claims**

1. An imidazolylcarboxylic acid compound of the formula:



(I)

wherein Ph is an unsubstituted phenyl group or a phenyl group substituted with one or two halogen atoms, R is a hydrogen atom or a C_1–C_8 alkyl group and n is an integer of 1 to 8.

10. An antifungal composition which comprises as an active ingredient an antifungally effective amount of at least one of the imidazolylcarboxylic acid compounds according to claim 1 and at least one inert carrier or diluent.

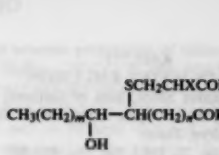
4,461,775

HYDROXYTHIOETHER FATTY ACID DERIVATIVES

Kerry G. Stanley, Lansdale, and Winston Ho, Hatfield, both of Pa., assignors to McNeilab, Inc., Fort Washington, Pa.

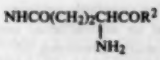
Filed Aug. 2, 1982, Ser. No. 404,244
Int. Cl.³ C07C *149/20, 149/243;* **A61K** *31/19, 31/22*
U.S. Cl. 424—311 **14 Claims**

1. A hydroxythioether fatty acid derivative represented by the following formula (I) and which may be of either the threo or erythro configuration:

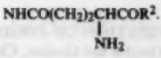


(I)

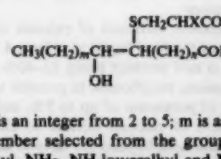
wherein n is an integer from 2 to 5; m is an integer from 8–10; R^1 is a member selected from the group consisting of OH, O-loweralkyl, NH_2, NH-loweralkyl and NH-carboxyloweralkyl and R^2 is OH, or O-loweralkyl; X is a member selected from the group consisting of H, NH_2 and



and the therapeutically acceptable basic salts thereof when R^1 or R^2, or both, are OH; and the therapeutically acceptable acid addition salts thereof where X is NH_2 or

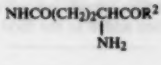


7. A method for treating allergic diseases by administering to an animal having such a disease, a therapeutically effective amount of a hydroxythioether fatty acid derivative represented by the following formula (I) and which may be of either the threo or erythro configuration:

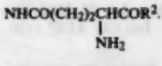


(I)

wherein n is an integer from 2 to 5; m is an integer from 8–12; R^1 is a member selected from the group consisting of OH, O-loweralkyl, NH_2, NH-loweralkyl and NH-carboxyloweralkyl; and R^2 is OH, or O-loweralkyl; X is a member selected from the group consisting of H, NH_2 and



and the therapeutically acceptable basic salts thereof when R^1 or R^2, or both, are OH; and the therapeutically acceptable acid addition salts thereof where X is NH_2 or



4,461,776

PROLONGED ACTION DRUG FORMULATION

James Swarbrick, Chapel Hill, N.C., assignor to University of Southern California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 142,279, Apr. 21, 1980. This application Jan. 28, 1982, Ser. No. 343,663
Int. Cl.³ A61K *31/10, 31/165*
U.S. Cl. 424—324 **2 Claims**

1. A prolonged action drug formulation comprising particles of diaminodiphenyl sulfone each of said particles being coated with a derivative obtained by acylation of said diaminodiphenyl sulfone at the surface of said drug particles, said diaminodiphenyl sulfone constituting about 25–95 weight percent of said formulation.

4,461,777

OIL-IN-WATER EMULSION

Itaru Murase; Tadakatsu Saisu, both of Saitama, and Kinichi Hasegawa, Tokyo, all of Japan, assignors to Nippon Oil & Fats Co., Ltd., Tokyo, Japan

Filed Aug. 20, 1982, Ser. No. 409,805
Claims priority, application Japan, Aug. 20, 1981, 56-130746
Int. Cl.³ A23D 5/00
U.S. Cl. 426—330.6 9 Claims

1. An edible oil-in-water emulsion, comprising:
water;
edible fats and oils dispersed in the water in the form of an emulsion;
milk protein and/or vegetable protein;
an emulsifier; and an antibacterial combination of amino acids and saccharides consisting of,
0.2 to 6% by weight of one or more amino acids based on the weight of the emulsion; and
3 to 40% by weight of saccharides based on the weight of the emulsion.

4,461,778

DEACIDIFICATION OF FOOD LIQUIDS

Christiane S. E. L. Vialatte nee Geolier, Champigny sur Marne, France, assignor to SOFRALAB, Societe Francaise des Laboratoires d'Oenologie, Champigny sur Marne, France

Filed Mar. 10, 1982, Ser. No. 356,619
Claims priority, application France, Mar. 11, 1981, 81 04828
Int. Cl.³ C12H 1/10; C12G 1/00; A23L 3/34
U.S. Cl. 426—422 8 Claims

1. A product for deacidifying malic acid containing food liquids, which comprises
a mixture of an amount sufficient of calcium carbonate to increase the pH of the food liquid to at least 4.5, the quantity of calcium in said product being 22–40%;
an amount of potassium bicarbonate to provide said product with a quantity of potassium of up to 5%; and
an amount sufficient of calcium tartrate to eliminate that portion of the malic acid beyond the tartaric acid stoichiometrically equivalent content, said product further comprising a calcium double salt of tartaric and malic acids, whereby the amount of tartaric acid in said product is 5–40% and the amount of malic acid is up to 3%;
whereby said mixture causes precipitation of crystals of tartromalate when added to the food liquid.

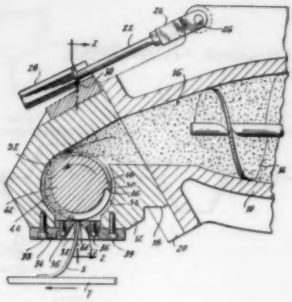
4,461,779

METHOD OF MAKING EXTRUDED FOOD PRODUCTS

Alan R. Peters, Stratford, Conn., assignor to Automation International Corp., Norwalk, Conn.

Division of Ser. No. 275,210, Jun. 24, 1981, Pat. No. 4,413,973.
This application Jul. 26, 1983, Ser. No. 517,427
Int. Cl.³ A23P 1/00
U.S. Cl. 426—516 2 Claims

1. A method of making an extruded food product from plastic food material comprising the steps of:
forcing said food material into the depression of a roll that is positioned within an extruder head of an extrusion means and is juxtaposed in closely spaced-apart relationship to an elongated aperture in an extrusion die with the axis of said roll substantially parallel to the long axis of said aperture, said roll having at least one depression in the surface thereof, at least one edge of which is a generally axially oriented leading edge and forms an abrupt ridge with respect to the surface of said roll, the depth of said depression with respect to the circumference of said roll being greater at each point along said leading edge than at the circumferentially corresponding point on the opposite trailing edge of said depression; and
rotating said roll in a predetermined direction such that as said depression moves past said aperture, said leading edge passes said aperture before said trailing edge, thereby extruding said food material through said aperture to form



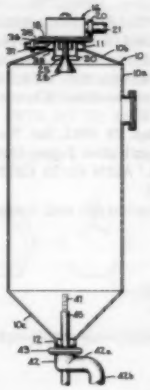
an extruded food product having uniform dimension and configuration.

4,461,780

METHOD OF STERILIZING LIQUID FOOD PRODUCTS

Samuel A. Menacci, San Jose, Calif., assignor to FMC Corporation, Chicago, Ill.

Division of Ser. No. 267,209, May 26, 1981, Pat. No. 4,375,185.
This application Sep. 3, 1982, Ser. No. 414,991
Int. Cl.³ A23C 3/02; A23L 3/24
U.S. Cl. 426—521 6 Claims



1. A method of sterilizing liquid food products comprising the steps of providing an upright cylindrical vessel having upright walls, directing steam into the top portion of said vessel to fill the interior, directing a stream of liquid downwardly into the upper part of said vessel adjacent the vertical axis of said vessel, diverting said stream radially outwardly away from the axis along a path completely encircling the axis and spaced inwardly from said walls to form a descending curtain having internal and external surfaces of generally frusto-conical shape moving downwardly through the steam in the interior of said vessel with the internal and external surfaces being contacted by the steam and being sterilized thereby, said curtain progressively and simultaneously decreasing in thickness and increasing in surface area contacted by the steam as the curtain moves downwardly through the steam for increasing the rate of heat absorption by the liquid, and directing steam upwardly within said frusto-conical curtain at a pressure substantially equal to the steam pressure in the chamber exter-

nally of the curtain for heating both the external and internal surfaces of the curtain.

4,461,781

FREEZING OF VEGETABLES

Yngve R. Akesson, Halsingborg; Bengt L. Bengtsson, Bjuv, and Lars G. Bodenaes, Aengelholm, all of Sweden, assignors to Societe d'Assistance Technique pour Produits Nestle, S.A., Lausanne, Switzerland

Filed May 3, 1983, Ser. No. 491,283

Claims priority, application European Pat. Off., May 3, 1982, 82103771

Int. Cl.³ A23B 7/04

U.S. Cl. 426—524 5 Claims

1. A method of freezing boiled rice or a blanched leafy vegetable in a freezer having an operating temperature from −25° C. to −50° C. to produce a frozen substantially non-lumpy, free-flowing product characterised in that before entering the freezer, the unfrozen boiled rice or blanched leafy vegetable is cooled and then intimately mixed with from 20% to 80% by weight based on the weight of the mixture of already frozen free-flowing boiled rice or blanched leafy vegetable, respectively.

4,461,782

LOW CALORIE BAKED PRODUCTS

Medford D. Robbins, Whitewater Township, Franklin County, Ind., and Sheila S. Rodriguez, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 16, 1982, Ser. No. 348,634

Int. Cl.³ A21D 13/00

U.S. Cl. 426—549 8 Claims

1. A low calorie baked product comprising:

(a) from about 12% to about 60% of a non-absorbable, non-digestible liquid polyol fatty acid polyester;

(b) as an anti-anal leakage agent, from about 10% to about 50% by weight of the polyol polyester of a fatty acid having a melting point of 37° C. or higher, or an ester of such fatty acids;

(c) from about 25% to about 85% of a mixture of microcrystalline cellulose and flour in a weight ratio cellulose:flour of from about 3:2 to about 9:1.

4,461,783

NON-SINGLE-CRYSTALLINE SEMICONDUCTOR LAYER ON A SUBSTRATE AND METHOD OF MAKING SAME

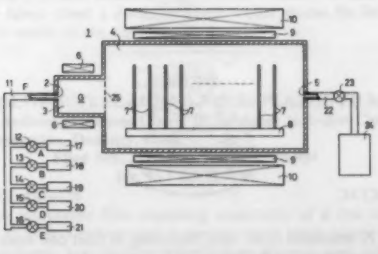
Shunpei Yamazaki, 21-21 Kitakarasuyama 7-chome, Setagaya-ku, Tokyo, Japan

Division of Ser. No. 377,314, May 12, 1982, which is a division of Ser. No. 177,889, Aug. 14, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 428,737

Claims priority, application Japan, Aug. 16, 1979, 54-104452

Int. Cl.³ B05D 3/06

U.S. Cl. 427—39 12 Claims



1. A non-single-crystalline semiconductor layer on a substrate, wherein the non-single-crystalline semiconductor layer has at least a non-single-crystalline compound semiconductor layer, which consists principally of silicon and tin and is expressed by $Si_xSn_{1-x}(0<x<1)$ and which has a sufficiently smaller energy band gap than a non-single-crystalline semiconductor of silicon so that the layer is sensitive to light of a long wavelength such as infrared rays and where said non-single crystalline compound semiconductor layer also contains hydrogen as a dangling bond neutralizer.

4,461,784

ELECTRON BEAM CURING OF UNSATURATED COATING MATERIALS

Wilhelm L. Baulmann, Leichlingen, Fed. Rep. of Germany, assignor to Hermann Wiederhold GmbH, Helden, Fed. Rep. of Germany

Filed Apr. 18, 1983, Ser. No. 485,892

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1982, 3214757

Int. Cl.³ B05D 3/06

U.S. Cl. 427—44 6 Claims

1. A process for the preparation of organic coatings from curable polymer systems in which the polymer systems applied to a substrate are hardened by electron bombardment, characterised in that, prior to application, a barrier material (to protect the surface from the access of air) in the form of an aqueous emulsion of a waxy material is admixed with the curable polymer systems.

4,461,785

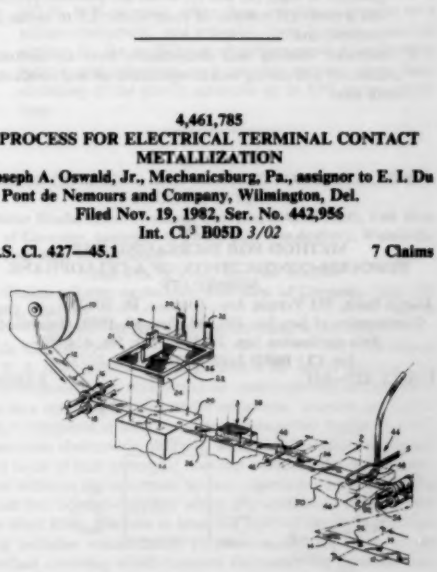
PROCESS FOR ELECTRICAL TERMINAL CONTACT METALLIZATION

Joseph A. Oswald, Jr., Mechanicsburg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 19, 1982, Ser. No. 442,956

Int. Cl.³ B05D 3/02

U.S. Cl. 427—45.1 7 Claims



1. Process for forming a noble metal contact area on metal stock suitable for forming into an electrical terminal comprising feeding the metal stock through a screen printing zone where a thick film noble metallization paste composition is applied to a predetermined position on the metal stock and thereafter feeding the metal stock into an induction heating coil where the metallization composition on the metal stock is heated in the presence of an inert gas.

4,461,786

BLENDED POLYESTERIMIDE-POLYESTERAMIDE-IMIDE ELECTRICAL COATING COMPOSITIONS

Denis R. Pauzé, East Glenville, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 194,975, Oct. 8, 1980, abandoned. This application May 24, 1982, Ser. No. 381,126
Int. Cl.³ B05D 5/12
U.S. Cl. 427—120 3 Claims

1. A method of obtaining a smooth coating of polyesterimide on an electrical conductor which comprises forming a composition from a polyesterimide obtained by heating the following ingredients to a temperature of from about 190° C. to about 250° C., said ingredients comprising:

A.

(a) an aromatic diamine;

(b) an aromatic carboxylic anhydride containing at least one additional carboxylic group;

(c) terephthalic acid or a reactive derivative thereof;

(d) a polyhydric alcohol having at least three hydroxyl groups;

(e) an alkylene glycol; and

B. from 1 to 20 percent by weight of total weight of solids of component A above and this component B of a polyesteramideimide obtained by heating the following ingredients to a temperature of from about 190° C. to about 250° C., said ingredients comprising:

(a) a tricarboxylic acid compound;

(b) a polyamine; and

(c) an aliphatic dicarboxylic acid; and

(d) thereafter adding an alkylene glycol to the reaction product of B(a), (b) and (c) when the reaction product has a carboxyl content of from about 2.5 to about 2.7 percent; and

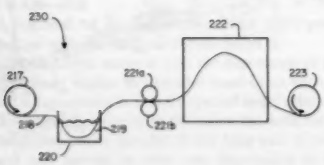
C. thereafter coating said composition onto an electrical conductor and curing said composition on said conductor with heat.

4,461,787

METHOD FOR INCREASING THE THROUGH-CONDUCTIVITY OF A CELLOPHANE SUBSTRATE

Joseph Savit, 751 Vernon Ave., Glencoe, Ill. 60022

Continuation of Ser. No. 216,730, Dec. 15, 1980, abandoned. This application Sep. 27, 1982, Ser. No. 424,787
Int. Cl.³ B05D 5/12; B32B 23/08, 31/22
U.S. Cl. 427—121 8 Claims



1. The method of increasing the through-conductivity of a cellophane laminate substrate comprising the steps of:

submerging said substrate for a selected time in a conductive solution at room temperature, said conductive solution comprising a quaternary ammonium polymer and ethylene glycol monomethyl ether; and

drying said substrate upon removal from said solutions.

4,461,788

ELASTOMERIC COMPOSITION

Ransome J. Wyman, 821 Camino Colibri, Calabasas, Calif. 91302

Division of Ser. No. 380,367, May 20, 1982, Pat. No. 4,426,488. This application Nov. 28, 1983, Ser. No. 545,798
Int. Cl.³ B05D 1/02
U.S. Cl. 427—426 4 Claims

1. A method of applying a polyurethane elastomeric coating composition, which method comprises the steps of: providing a first liquid component including a polyol and an organic isocyanate; providing a pumpable rubber slurry component including rubber particles, a carbon dioxide absorbent and water in stoichiometric excess of that required to polymerize the polyol and the isocyanate reactants; pumping the first component and the rubber slurry component to combining and spraying means; and spraying the combined components on to a substrate to form an elastomeric coating.

4,461,789

METHOD OF GUNNING BASIC GUNNING REFRACTORIES

Masaru Takashima, 4-12-15, Takanawa, Minato-ku, Tokyo, Japan

Filed Mar. 29, 1983, Ser. No. 479,945
Int. Cl.³ B05D 1/02
U.S. Cl. 427—426 12 Claims

1. A method of gunning a basic gunning refractory by which there is provided on a cold or hot gunning surface, by a nozzle mixing method, a gunned coating or filling of a gunning refractory containing a basic refractory as aggregate, not more than 5% by weight of each of at least one of organic fibrous materials and inorganic fibrous materials, and as a binder, at least one of phosphates and silicates, characterized in that the gunning refractory is fed to a nozzle portion under air pressure in the range of 1–10 Kg/cm^2, the gunning refractory is then discharged while being mixed at the nozzle portion with 5–25% by weight of water under pressure in the range of 0.5–5 Kg/cm^2 and while a rotary motion is imparted thereto, the gunning being commenced by first discharging air and water simultaneously and then with the gunning refractory, and the distance between the nozzle discharge end and the gunning surface is in the range of 0.15 to 1.00 m while the spray width is less than 1.00 m.

4,461,790

SIMULATED CAKE AND COLLAPSIBLE CONTAINER THEREFOR

William Snider, 5218 Jon Paul Dr., Milford, Mich. 48042

Filed Dec. 2, 1982, Ser. No. 446,345
Int. Cl.³ B65B 25/16; B65D 85/36, 85/60
U.S. Cl. 428—7 9 Claims

1. A simulated layer cake, including at least one layer container structure, comprising:

(a) a base plate;

(b) a cylindrical container side wall member;

(c) means for detachably mounting the wall member on said

base plate, to form a container for holding a plurality of food items;

(d) a circular, container top wall member detachably mounted on the upper end of the cylindrical container side wall member to enclose the same; and,

(e) said layer container structure having the outer surface coated with real decorative icing.

4,461,791

FUR-LIKE ARTICLE HAVING PILE WITH DIFFERENCE IN COLOR OR FINENESS

Masao Matsui, Takatsuki; Kazuo Okamoto, and Takao Osagawa, both of Osaka, all of Japan, assignors to Kanebo, Ltd., Tokyo and Kanebo Synthetic Fibers Ltd., Osaka, both of, Japan

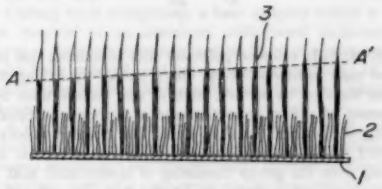
PCT No. PCT/JP82/00014, 371 Date Jul. 28, 1982, 102(e) Date Jul. 28, 1982, PCT Pub. No. WO82/02410, PCT Pub. Date Jul. 22, 1982

PCT Filed Jan. 14, 1982, Ser. No. 403,591

Claims priority, application Japan, Jan. 15, 1981, 56-4725; Jan. 21, 1981, 56-8318

Int. Cl.³ A01N *1/00*

U.S. Cl. 428—15 15 Claims



1. A fur-like article comprising: a substrate fabric sheet simulating the skin portion of a natural fur; a layer comprising a multiplicity of short, soft, first filaments of relatively small diameter projecting upwardly from the substrate fabric sheet; a multiplicity of long, hard, second filaments of relatively large diameter projecting upwardly from the substrate fabric sheet, uniformly distributed among said first filaments and projecting above the upper ends of said first filaments; said first filaments having a fineness of from about 0.5 to 3 d and the density of said first filaments on said substrate fabric sheet being in the range of 10,000 to 50,000 filaments per square centimeter; said second filaments having a fineness of from 15 to 200 d and the density of said second filaments on said substrate sheet being from 100 to 1,000 filaments per square centimeter, said first and second filaments being made of a material selected from the group consisting of synthetic fibers, cotton, wool and silk, at least one of the properties of color and fineness of said second filaments being different in the same way as to each of said second filaments at locations lying on opposite sides of an imaginary surface which is spaced from a surface of said substrate fabric sheet a distance which varies across the length and/or width of the fur-like article.

4,461,792

POLY-1-BUTENE MULTILAYERS PLASTIC FILM

John Anthony, Downers Grove, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 30, 1982, Ser. No. 428,996

Int. Cl.³ B32B *7/02*

U.S. Cl. 428—35 24 Claims

1. A multilayer film consisting essentially of a first outer layer of poly-1-butene and a second outer layer comprising low pressure, low density polyethylene wherein said poly-1-butene has a melt index of between about 1 and about 2 decigrams per minute and wherein said low pressure, low density polyethylene has a melt index of between about 0.3 and about 3.0 decigrams per minute and a density between about 0.91 and about 0.94 grams per cubic centimeter.

4,461,793

PRINTABLE COATING FOR HEATSHRINKABLE MATERIALS

Lyubov Blok, Milwaukee, and David G. Jewell, Franksville, both of Wis., assignors to W. H. Brady Co., Milwaukee, Wis.

Filed Feb. 7, 1983, Ser. No. 464,273

Int. Cl.³ B32B *27/04*

U.S. Cl. 428—36 5 Claims

1. A heatshrinkable indentification device comprising, in combination:

(1) a unidirectionally oriented plastic substrate heatshrinkable up to 50% in one direction, and

(2) a printable layer over an exterior surface of the substrate comprising about 2 to 11 lbs. of dry coating per 3,000 sq. ft. of substrate of a dried coating having, on a percent by weight of solids basis, (a) 50–62% of a solvent soluble, saturated film-forming polyester resin solid, (b) 16–20% calcium carbonate, (c) 9–16% of a silicate compound, and (d) 10–18% pigment other than calcium carbonate or a silicate compound, said printable layer forming a smooth surface for the application of alphanumeric identification indicia and retaining such smooth surface upon heatshrinking of the plastic substrate up to 50% in one direction.

4,461,794

FLOOR COVERING AND METHOD FOR INSTALLING A FLOOR COVERING

Dieter Bischoff, and Armando Favorite, both of Flirth, Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Feb. 8, 1983, Ser. No. 464,887

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1982, 3211855

Int. Cl.³ B32B *25/14, 25/16;* C09J *5/00, 5/02*

U.S. Cl. 428—57 9 Claims

1. A sealing floor covering suitable for use in moist rooms and outdoor areas, comprising an undercoat and an outermost surface covering bonded to the undercoat, wherein the undercoat comprises at least three bonded-together layers of a vulcanizable elastomeric material, wherein at least one intermediate layer of said undercoat contains vulcanization accelerator; and wherein the outermost surface covering is comprised of at least two bonded-together layers of a synthetic rubber in web or sheet form, wherein at least one layer of the surface covering includes vulcanization accelerator, but the layer of the surface covering which contacts the undercoat does not contain vulcanization accelerator.

9. A method for installing a floor covering comprising:

(a) arranging a plurality of individual undercoat sheets in a side-by-side fashion, with the edges of said sheets overlapping to completely cover the sub-flooring, wherein the undercoat sheets are comprised of at least three bonded-together layers of a vulcanizable elastomeric material, wherein at least one intermediate layer of said undercoat sheet includes a vulcanization accelerator, and

(b) bonding said undercoat sheets together in the area of overlap, and

(c) solvent or thermally bonding an outer surface covering comprised of at least two layers of a synthetic rubber to the undercoat, wherein at least one layer of the surface covering contains a vulcanization accelerator, but the layer of the surface covering contacting the undercoat does not contain a vulcanization accelerator.

4,461,795

MARKS FOR USE IN RUBBER ARTICLES

Masaki Ogawa, Kodaira, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Feb. 28, 1983, Ser. No. 470,735

Claims priority, application Japan, Mar. 1, 1982, 57-27130[U]; May 15, 1982, 57-70079[U]; May 21, 1982, 57-74511[U]; Dec. 22, 1982, 57-194698[U]; Feb. 7, 1983, 58-15368[U]

Int. Cl.³ B60C 13/00

U.S. Cl. 428—64 16 Claims

1. A mark for use in rubber article comprising a chromatic rubber composition layer containing not less than 30 parts by weight of at least one of chloroprene rubber and chlorosulfonated polyethylene rubber per 100 parts by weight of total rubber content and having a thickness of 0.1 to 1.5 mm, an antioxidant-migration film barrier selected from polyester film, nylon film, vinylidene chloride film and vinylidene chloride-vinyl chloride copolymer film and having a thickness of 3 to 100 μm, and an adhesive layer selected from thermoplastic polyesters and thermoplastic polyurethanes and having a thickness of 0.005 to 0.5 mm.

4,461,796

SOUND DAMPING MATERIALS

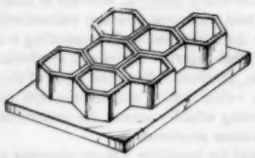
Yoshihide Fukahori, Hachioji; Yasuhiro Morimura, Kunitachi; Ryota Fujio, Akigawa, and Yukio Fukuura, Kawagoe, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Jul. 5, 1983, Ser. No. 511,062

Claims priority, application Japan, Jul. 6, 1982, 57-116198

Int. Cl.³ B32B 3/12

U.S. Cl. 428—116 6 Claims



1. A sound damping material comprising; a composite structural body of a honeycomb or corrugated core, a plane sheet and a pressure sensitive adhesive layer, a height direction of said honeycomb or corrugated core being perpendicular to a surface of a vibrating body, and said at least one pressure sensitive adhesive layer being existent between said honeycomb or corrugated cores or between said honeycomb or corrugated core and said plane sheet and having a dynamic shearing storage modulus of $1\times10^3\sim1\times10^7$ dyn/cm² at 25° C. and 15 Hz.

4,461,797

POLYESTER FILM WITH PROJECTIONS AND DEPRESSIONS ON THE SURFACE

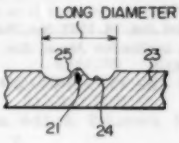
Tomio Adachi, Sagamihara; Hideo Katoh, Kanagawa, and Atsushi Yamamoto, Sagamihara, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Oct. 14, 1981, Ser. No. 311,330

Claims priority, application Japan, Oct. 15, 1980, 55-142871

Int. Cl.³ G11B 5/70

U.S. Cl. 428—147 2 Claims



1. A biaxially oriented polyester film containing fine particles of inert additives therein characterized by having many uneven units on its surface, each of said uneven units being composed of a fine projection and a depression elliptically existing therearound, said polyester film being a copolymer obtained by the polycondensation of aromatic dibasic acids selected from the group consisting of terephthalic acid, isophthalic acid and naphthalene-2,6-dicarboxylic acid and glycols selected from the group consisting of ethylene glycol, tetramethylene glycol and neopentyl glycol; a homopolymer selected from the group consisting of polyethylene terephthalate, polybutylene terephthalate and polyethylene-2,6-naphthalenedicarboxylate; or a polymer blend of polyethylene terephthalate and an ethylene terephthalate/polyethylene glycol block copolymer; wherein each depression of the polyester film surface has an elliptical shape with a long diameter in the range of 2 μm to 50μm; and wherein the following relationship exists between the frequency of occurrence of the uneven units N (per mm²) and the long diameter D (μm) of the depression on the surface of the film surface;

when $2\leqq D<5$, $200\leqq N<3500$,

when $5\leqq D<10$, $150\leqq N<2000$,

when $10\leqq D<30$, $50\leqq N<800$,

and

when $30\leqq D\leqq50$, $0\leqq N\leqq5$.

4,461,798

METAL-REINFORCED SYNTHETIC WOOD MATERIAL

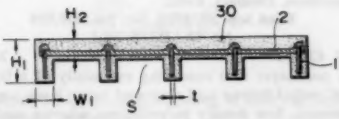
Takeshi Uchida, c/o Nichimen Co., Ltd., 1-9 Doujimahama 2-chome, Osaka-shi, Osaka-fu, Japan

Filed Sep. 21, 1982, Ser. No. 420,824

Claims priority, application Japan, Sep. 21, 1981, 56-140059[U]

Int. Cl.³ B32B 3/12, 9/00

U.S. Cl. 428—160 7 Claims



1. A metal-reinforced synthetic wood structure comprising: a metal assembly for reinforcement, said metal assembly

having a plurality of elongated lateral metal plates aligned in parallel with each other, said lateral plates being coupled at least at two positions with longitudinal plates; and

a synthetic resin covering for said metal assembly, the entire upper surface of said covering being a planar portion of predetermined thickness, portions of said lateral plates depending downwardly below said planar portion and being surrounded by resin of said covering to form parallel spaced ribs.

4,461,799

CUTTING TOOLS WITH WEAR-RESISTANT COATING OF HEAT-RESISTANT COMPOUNDS OF HIGH-MELTING METALS AND METHOD FOR MANUFACTURING SAME

Alexei G. Gavrilov, Moskovskaya; Galina K. Galitskaya, Moscow; Viktor P. Zhed, Moscow; Andrei K. Sinelschikov, Moscow; Valentin G. Padalka; Albert M. Boyarunas, both of Kharkov; Vyacheslav N. Panin, and Vitaly N. Barinov, both of Moscow, all of U.S.S.R., assignors to Vsesojuzny Nauchnois-sledovatelsky Instrumentalny Institut, Moscow, U.S.S.R.

Filed Feb. 14, 1983, Ser. No. 465,829

Int. Cl.³ B23P *15/28;* **B26D** *1/00;* **B32B** *33/00;* **B05D** *1/02*

U.S. Cl. 428—210 **3 Claims**

1. Cutting tools comprising: a base material which is a ceramic material or an aluminum oxide-based metal-ceramic material; a discontinuous intermediate layer of a pure material on said base material; and a wear-resistant coating of heat-resistant compounds of high-melting metals on said intermediate layer.

2. A method for manufacturing cutting tools of the type as claimed in claim 1, comprising the steps of using condensation of plasma matter and ion bombardment in order to deposit an intermediate layer of a pure metal on the base material whose temperature is $\frac{1}{4}T_S > T > \frac{1}{3}T_S$, where T_S is the melting temperature of the metal being deposited and T is the temperature of said base material in °K. The condensation rate and the duration of deposition being selected bearing in mind that metal is to be deposited only on defects found on the surface of said base material; and using condensation of plasma matter and ion bombardment in order to deposit a wear-resistant coating of heat-resistant compounds of high-melting metals on said intermediate layer.

4,461,800

PRESS PAD FOR FORMING PRESS

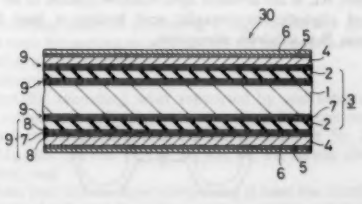
Atsuo Tanaka, Yawata, Japan, assignor to Yamauchi Rubber Industry Co., Ltd., Osaka, Japan

Filed Nov. 16, 1982, Ser. No. 442,137

Claims priority, application Japan, Nov. 27, 1981, 56-177122[U]

Int. Cl.³ B29D *17/00;* **B29C** *3/00;* **B32B** *5/32*

U.S. Cl. 428—217 **13 Claims**



1. A press pad for a forming press comprising a laminated core, said laminated core comprising at least one hard cushion layer disposed between two rigid sheets, said rigid sheets having a high thermal conductivity; and two soft cushion layers, said soft cushion layers comprising porous elastic sheets, said soft cushion layers being bonded to each of the surfaces of said laminated core, said hard cushion layer comprising at least one porous elastic sheet impregnated with a binder.

4,461,801

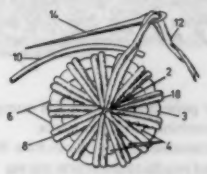
WOVEN ARTICLE AND METHOD OF MAKING THE SAME

William T. Graham, Verona, Wis., assignor to W. T. Rogers Co., Madison, Wis.

Filed Dec. 28, 1981, Ser. No. 335,085

Int. Cl.³ D03D *29/00*

U.S. Cl. 428—224 **11 Claims**



1. A spirally woven article (34) comprising:

a. A spiral weaving starter (1) having a body (3) with a central opening (2) formed therein, a plurality of secondary openings (4) formed therein and arranged in a pattern around the central opening (2), and an outer edge (5);

b. a length of coiling material (10) of linearly flexible filament spirally forming the framework of the article by being coiled around the starter (1); and

c. a length of flexible wrapping material (12) wrapped around adjacent coiling material (10) and also wrapped around the coiling material (10) and through the secondary openings (4) in the starter (1), to hold the coiling material in position and to attach it to the starter (1); the wrapping material (12) also wrapped between the central opening (2) and the outer edge (5) of the starter (1) to substantially cover the starter (1) and to fill the central opening (2);

d. a plurality of notches (8) located on the outer edge (5) of the body (3) of the starter (1), there being one notch (8) located between each adjacent pair of the secondary openings (4).

4,461,802

BOW AND SKEW RESISTANT PLAIN-WEAVE POLYOLEFIN

Robert C. Lausch, Ephrata, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Dec. 27, 1982, Ser. No. 453,741

Int. Cl.³ D06M *15/26, 15/36*

U.S. Cl. 428—229 **28 Claims**

1. A bow and skew resistant plain-weave polyolefin fabric, said fabric comprising air-textured yarn and being coated with a vinyl acetate-ethylene copolymer emulsion at a dry weight deposition level of from about 0.02 to about 3.0 ounces per square yard of fabric, said emulsion comprising not more than about 25% solids by weight.

15. A process for preparing a bow and skew resistant plain-weave polyolefin fabric, said process comprising the steps of

selecting a plain-weave polyolefin fabric prepared from air textured yarn,

treating said fabric with a vinyl acetate-ethylene copolymer emulsion comprising not more than about 25% solids by weight, said emulsion being applied at a dry-weight level of about 0.02 to about 3.0 ounces per square yard of fabric, and

drying said fabric.

4,461,803

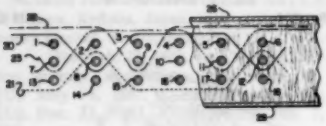
PAPERMAKER'S FELT HAVING MULTI-LAYERED BASE FABRIC

Ian K. Booth, Clinton, and Frank J. Cunnane, III, Laurens, both of S.C., assignors to Ascoe Felts, Inc., Clinton, S.C.

Continuation-in-part of Ser. No. 484,575, Apr. 13, 1983. This application Jun. 17, 1983, Ser. No. 505,386

Int. Cl.³ B32B *5/02*

U.S. Cl. 428—234 **27 Claims**



1. A multi-layer papermaker's wet felt comprising:

a top layer of machine direction yarns;

at least one intermediate layer of machine direction yarns;

a bottom layer of machine direction yarns;

a system of cross-machine direction yarns for interwoven with said top, middle and bottom machine direction layers, each said cross-machine direction yarns woven in a repeat pattern having interlacings with machine direction yarns in at least two of said machine direction layers;

each said cross-machine direction yarns interwoven with said top layer with floats which extend over at least two top layer yarns so that said cross-machine direction yarns predominate the surface which they define with said top layer;

each said cross-machine direction yarns interweaving with said bottom layer with floats which extend under at least two machine direction yarns so that said cross-machine direction yarns predominate the surface which they define with said bottom layer.

4,461,804

AQUEOUS SIZING COMPOSITION FOR GLASS FIBERS FOR USE IN PRODUCING A MAT

Donald L. Motsinger, Forest City, and Daniel G. Brown, Caroleen, both of N.C., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 29, 1981, Ser. No. 268,542

Int. Cl.³ D04H *1/58;* **B32B** *9/00;* **C09K** *3/00;* **C03C** *25/02*

U.S. Cl. 428—288 **23 Claims**

1. An aqueous non-starch containing treating composition for producing wet chopped glass fibers, comprising:

a. one or more water soluble or dispersible polyols comprising a major amount of the solids of the treating composition,

b. one or more cationic lubricants present in a minor amount of the solids of the treating composition in comparison to the amount of polyol,

c. one or more water soluble or dispersible nonpolymeric organic amide compounds selected from the group consisting of urea (carbamide), methyl urea, 1,3-diethyl urea, 1,3-diaminourea (carbohydrozide), methylurea, acetyleneurea, acetylenediurea, melamine, acetamide, propionic amide up to caproamide, and diamides of saturated dicarboxylic acids and sebacamide, and semicarbazide, carbohydrazide, carbamidourea, allophanamide (biuret) and 1-carbomoylsemicarbamide (biurea) in an effective amount to provide moisture control of the wet chopped glass fibers in the range of about 9 to about 20 weight percent of the chopped glass fibers, and

d. water in an amount to give a solids content for the treating composition in the range of about 0.1 to about 5 weight percent.

4,461,805

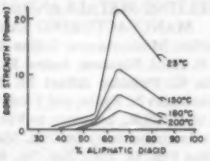
BONDABLE POLYAMIDE

George A. Walrath, Scotia, and Scott D. Smith, Ballston, both of N.Y., assignors to Schenectady Chemicals, Inc., Schenectady, N.Y.

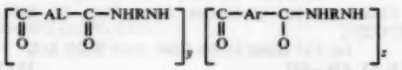
Division of Ser. No. 514,035, Jul. 15, 1983, which is a division of Ser. No. 311,385, Oct. 14, 1981, Pat. No. 4,420,535. This application Dec. 5, 1983, Ser. No. 557,964

Int. Cl.³ B32B *27/00, 9/02, 27/06*

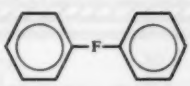
U.S. Cl. 428—349 **2 Claims**



1. A self-bondable laminate of a copolyamide having the recurring unit



where AL is the divalent hydrocarbon residue of an unsubstituted aliphatic dicarboxylic acid having at least 6 carbon atoms, R is tolylene, phenylene,

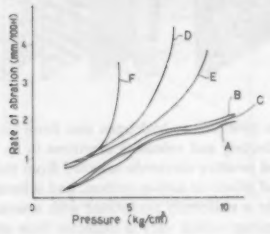


where F is O, CH_2, or SO_2 or is a cycloaliphatic hydrocarbon, Ar is p-phenylene, y is 35 to 80% of the recurring units and z is 65 to 20% of the recurring units coated onto a film of a polymer selected from the group consisting of a different polyamide, polyamide-imide, polyimide, poly-parabanic acid, polyester and perfluoroolefin polymer.

4,461,806
SHAPED ARTICLES OF NON-FIBROUS CARBONACEOUS MATERIAL

Shigeru Ikeda, Kawanishi; Shozi Hori, Takatsuki; Kiyohisa Eguchi, Kawanishi; Kanji Matsuo, Ikeda; Hidenori Zaima, Kanazawa; Yoshifumi Gamada, Neyagawa, and Teruhisa Kondo, Toyonaka, all of Japan, assignors to Agency of Industrial Science & Technology; Kyowa Carbon Co., Ltd. and Toyo, Tanso Co., Ltd., all of Tokyo, Japan

Filed Feb. 12, 1982, Ser. No. 348,255
Claims priority, application Japan, Feb. 13, 1981, 56-20346
Int. Cl.³ B32B *9/00*; B05D *3/02*; C09K *3/14*
U.S. Cl. 428—408 7 Claims

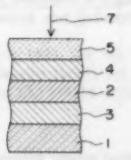


1. A shaped article of a non-fibrous carbonaceous material wherein the non-fibrous carbonaceous material is impregnated with a borosilicate glass comprising 25 to 50 wt. % of SiO_2 and 20 to 45 wt. % of B_2O_3 as effective components.

4,461,807
RECORDING MATERIAL

Koichi Mori, and Masafumi Nakao, both of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 285,415, Jul. 22, 1981, abandoned. This application Aug. 29, 1983, Ser. No. 527,201
Claims priority, application Japan, Jul. 25, 1980, 55-102101; Aug. 11, 1980, 55-110054; Aug. 27, 1980, 55-118103
Int. Cl.³ G01D *15/10*
U.S. Cl. 428—469 13 Claims



1. A recording material possessing a high sensitivity and a high S/N ratio for making an information recording in a metallic recording layer comprising:

(a) a substrate;

(b) a metallic recording layer supported by said substrate, said metallic recording layer comprising at least one member selected from the group consisting of In, Bi, Sn, Zn, Pb, Mg, Au, Ge, Ga, Tl, Cd, Sb, Rh, Se, Te, Al and alloys thereof; and

(c) at least one mixture layer comprising at least one metallic compound selected from the group consisting of Al_2O_3, ZrO_2, Cr_2O_3, GeO_2, SiO_2, SnO_2, Bi_2O_3, As_2O_3, Sb_2O_3, Ta_2O_3, Sm_2O_3, TiO_2, CeO_2, La_2O_3 and Dy_2O_3 and at least one metal selected from the group consisting of Al, Si, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Ge, As, Sr, Y, Zr, Nb, Tc, Ru, Rh, Pd, Ag, In, Sn, Sb, La, Hf, Ta, Re, Ir, Tl, Pb, Bi, Dy, Er, Gd, Nd, Pr, Sm, Mo, Au, Pt, W, Se and Te, wherein the volume percentage of said metal in said mixture layer is in the range of 10 to 80%, said mixture layer being provided on at least one side of said metallic recording layer,

but if said mixture layer is provided only on the side of said metallic recording layer adjacent said substrate, then said recording material is further provided with at least one stabilizing layer of a metallic compound on at least the side of said metallic recording layer remote from said substrate,

said metallic recording layer and said mixture layer having a positional relationship such that said information is recorded in said metallic recording layer with irradiation from a laser beam through said mixture layer,

thereby causing only said metallic recording layer to be adapted to be imaged upon irradiation with said laser beam.

4,461,808
FILMS FROM NYLON BLENDS HAVING A MOISTURE CONTENT OF 0.75 TO 2.25 WEIGHT PERCENT

Alistair N. Mollison, Kingston, Canada, assignor to Du Pont Canada Inc., Mississauga, Canada

Filed Apr. 27, 1983, Ser. No. 489,098
Int. Cl.³ B32B *27/10*
U.S. Cl. 428—475.8 11 Claims

1. An oriented nylon film made from a blend of nylon 66 and another nylon selected from the group consisting of nylon 6, nylon 11, nylon 12 and nylon 6,12, the weight proportions of nylon 66 to said other nylon being in the range of from 92:8 to 75:25, said nylon film having a moisture content of from about 0.75 to about 2.25 wt. %.

9. A film laminate comprising an oriented nylon film and a sealant web, said nylon film being made from a blend of nylon 66 and another nylon selected from the group consisting of nylon 6, nylon 11, nylon 12 and nylon 6,12 the weight proportions of nylon 66 to said other nylon being in the range of from 92:8 to 75:25, said nylon film having a moisture content of from about 0.75 to about 2.25 wt. %.

4,461,809
SURFACE TREATING AGENT AS AN UNDERCOAT ON SURFACE OF POLYOLEFIN SHAPED ARTICLES

Teiichi Shiomi, and Kotaro Kishimura, both of Ohtake, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Sep. 9, 1982, Ser. No. 416,377
Claims priority, application Japan, Sep. 11, 1981, 56-142247
Int. Cl.³ B32B *27/36*; C08K *5/01*
U.S. Cl. 428—482 7 Claims

1. A surface treating agent coated as an undercoat on the surface of a polyolefin shaped article to be coated with a paint, said agent being composed of a solution in an organic solvent of a modified polymer resulting from graft copolymerization of a propylene-ethylene copolymer with an alkyl ester of a monolefinic dicarboxylic acid, said propylene-ethylene copolymer having a propylene content of 50 to 75 mole% and a crystallinity, determined by an X-ray diffraction method, of 2 to 20%, the amount of said alkyl ester of the monolefinic dicarboxylic acid grafted being 0.5 to 15% by weight, said alkyl ester of the monolefinic dicarboxylic acid having an esterification degree of 45 to 100% provided that the esterification degree is taken as 200% when all of the carboxyl groups of the dicarboxylic acid are esterified, and said modified polymer having an intrinsic viscosity [η], determined in decalin solution at 135° C., of 0.3 to 20 (dl/g) and being dissolved in an amount of 10 to 100 kg per cubic meter of the organic solvent.

4,461,810

TiO_2 PIGMENT BEARING A COATING WITH CERIUM CATIONS AND SULFATE-, PHOSPHATE- OR SILICATE ANIONS AND LAMINATE AND COATING CONTAINING SAME

Howard W. Jacobson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 4, 1983, Ser. No. 481,925
Int. Cl.³ B32B *27/42*; C09C *1/62, 3/00*
U.S. Cl. 428—530 3 Claims

1. A pigment of rutile TiO_2 particles bearing coatings consisting of alumina or alumina-silica, the particle surfaces having associated therewith 0.5–2%, by weight of the TiO_2, of cerium cations and a stoichiometric amount of sulfate-, phosphate or silicate anions.

2. A paper laminate comprising paper and a pigment according to claim 1, in a rigid matrix.

3. A coating composition comprising
(a) a pigment according to claim 1,
(b) a film-forming material, and
(c) a liquid carrier.

4,461,811

STABILIZED FERRITIC STAINLESS STEEL WITH IMPROVED BRAZEABILITY

Paul R. Borneman, and George Aggen, both of Sarver, Pa., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 176,324, Aug. 8, 1980, abandoned. This application Jul. 27, 1982, Ser. No. 402,386
Int. Cl.³ C22C *38/28*
U.S. Cl. 428—677 17 Claims

1. A brazeable ferritic stainless steel consisting essentially of, by weight, 10.5% to 13.5% chromium, up to 0.03% carbon, up to 0.05% nitrogen, up to 0.10% aluminum, up to about 0.12% titanium, up to 0.12% aluminum plus titanium and at least one other stabilizing element selected from the group consisting of niobium and tantalum in an amount in accordance with the relationship

$$\frac{\frac{WT\ \%\ Nb}{93} + \frac{WT\ \%\ Ta}{181} + \frac{Wt\ \%\ Ti}{48}}{\frac{WT\ \%\ C}{12} + \frac{WT\ \%\ N}{14}} > 1,$$

the steel being wettable by brazing filler materials.

16. A method of brazing ferritic stainless steel consisting essentially of, by weight, 10.5% to 13.5% chromium, up to 0.03% carbon, up to 0.05% nitrogen, up to 0.10% aluminum, up to 1.25% molybdenum, up to 1% manganese, up to 1% silicon, up to about 0.12% titanium, up to 0.12% aluminum plus titanium and at least one other stabilizing element from the group consisting of niobium and tantalum in an amount in accordance with the relationship

$$\frac{\frac{WT\ \%\ Nb}{93} + \frac{WT\ \%\ Ta}{181} + \frac{Wt\ \%\ Ti}{48}}{\frac{WT\ \%\ C}{12} + \frac{WT\ \%\ N}{14}} > 1,$$

the steel being brazed with a filler material.

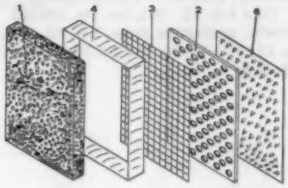
4,461,812

LIGHTWEIGHT STORAGE BATTERY

Alessandro Mascioli, Rome, Italy, assignor to General Moped Co., Inc., New York, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,491
Claims priority, application Italy, Nov. 12, 1980, 50132 A/80
Int. Cl.³ H01M *12/04*
U.S. Cl. 429—29 19 Claims

1. A lightweight storage battery consisting essentially of:
(a) a thin negative electrode consisting essentially of finely divided, porous iron;
(b) a thin, gelatinized, sealed, immobile layer of alkali electrolyte, aligned adjacent to the positive and negative electrodes to prevent direct contact therebetween;
(c) a thin, positive electrode with means for collecting oxygen from a gaseous environment, binding said oxygen by



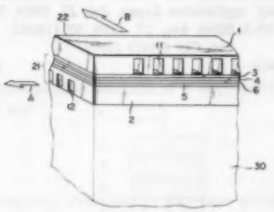
catalytic synthesis to hydrogen ions from the electrolyte, and collecting and releasing electrons in an external circuit, said positive electrode selected from the group consisting of silver or active carbon, and wherein the silver electrode is uniformly perforated with a series of equidistant openings which vary in diameter from about 40 to 60 microns.

4,461,813

ELECTROCHEMICAL POWER GENERATOR

Tamotsu Shirogami, Yamato, and Mitsushi Ueno, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 10, 1982, Ser. No. 440,624
Claims priority, application Japan, Nov. 24, 1981, 56-188054
Int. Cl.³ H01M *8/04*
U.S. Cl. 429—34 5 Claims



1. An electrochemical power generator having a structure where a plurality of unit cells are stacked such that each pair of adjacent unit cells sandwich an interconnector therebetween, each unit cell being formed such that an anode of a porous carbon substrate having an anode catalyst layer on one surface thereof and a cathode of a porous carbon fiber sheet having a cathode catalyst layer on one surface thereof sandwich a matrix layer containing an electrolyte solution of a concentrated acid solution therebetween so as to respectively bring two surfaces of said matrix layer into tight contact with said anode and cathode catalyst layers respectively, said interconnector being formed from a high density carbon plate, and said electrochemical power generator using as an anode reactant material a gas containing hydrogen as a major component and using as a cathode reactant material an oxidizing gas,

characterized in that a plurality of grooves which function as a gas passage for the gas containing hydrogen as the major component are formed in the other surface of said anode, said cathode is thinner than said anode and is waterproofed, and a plurality of grooves which function as a

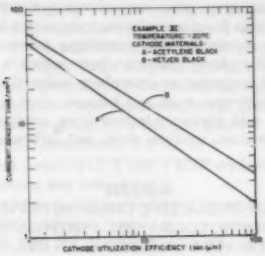
gas passage for the oxidizing gas are formed in one surface of said interconnector.

4,461,814

ELECTROCHEMICAL CELL

Keith A. Klinedinst, Marlborough, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Feb. 8, 1982, Ser. No. 346,816
Int. Cl.³ H01M 4/96, 6/14
U.S. Cl. 429—42 **9 Claims**



1. A primary electrochemical cell comprising an oxidizable active anode material;

a cathode current collector including a catalyst for reducing the liquid cathode material comprising carbon black characterized by a surface area of 250 square meters per gram or greater and a dibutyl phthalate absorption number of 125 cubic centimeters per 100 grams of carbon black or greater bonded to an inert electrically-conductive substrate; and

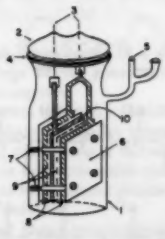
an electrolytic solution, in contact with the anode material and cathode current collector, comprising a reducible liquid cathode material and an electrolyte solute dissolved therein.

4,461,815

CA ELECTROCHEMICAL CELL

Emanuel Peled, Even Yehuda, and Azieh Meitav, Rishon-Lecion, both of Israel, assignors to Ramot University Authority For Applied Research and Industrial Development Ltd., Tel-Aviv, Israel

Filed Jul. 9, 1982, Ser. No. 396,838
Claims priority, application Israel, Jul. 16, 1981, 63336
Int. Cl.³ H01M 4/36
U.S. Cl. 429—105 **10 Claims**



1. An electrochemical cell resistant to abusive charging and over-discharging comprising in combination:

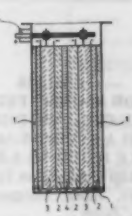
an alkaline earth metal anode selected from the group consisting of calcium, magnesium and from dischargeable alloys thereof, essentially free of alkali metals, a porous inert current collector, a liquid cathode in contact with said anode and current collector comprising an inorganic oxyhalide wherein there is dissolved a soluble calcium salt, forming a conductive solution with said solvent.

4,461,816

SOLID LITHIUM NITRIDE ELECTROLYTE BATTERY COMPRISING LITHIUM ALLOY ANODE

Henri R. Leribaux, Dilbeek, Belgium, assignor to Agence Spatiale Europeenne, Paris, France

Filed Sep. 29, 1982, Ser. No. 426,906
Claims priority, application France, Sep. 30, 1981, 81 18386
Int. Cl.³ H01M 6/18
U.S. Cl. 429—191 **12 Claims**



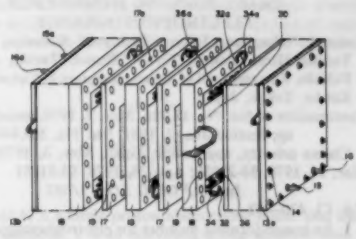
1. An electrochemical generator which comprises an anode formed from an alloy comprising 65 to 85% of lithium and 15 to 35% of lead or a mixture of lead and tin and a cathode formed of a material capable of undergoing intercalation reactions while reacting with lithium, and having a solid electrolyte which contains lithium nitride impregnated in a resinous matrix.

4,461,817

ELECTRODE FOR ELECTROLYTE CIRCULATION-TYPE CELL STACK SECONDARY BATTERY

Hiromichi Itoh, Tokyo; Takashi Hirose, Zushi, and Akira Yamamoto, Yokohama, all of Japan, assignors to Meidensha Electric Mfg. Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1983, Ser. No. 521,393
Claims priority, application Japan, Aug. 9, 1982, 57-137360
Int. Cl.³ H01M 4/02
U.S. Cl. 429—209 **4 Claims**



1. An electrode for an electrolyte circulation-type secondary cell stack battery in which an electrode member is supported by a frame member comprising:

a frame member;

an electrode member enclosed by said frame member;

a microchannel formed in each of electrolyte inlet and outlet sections of said electrode member;

a pair of manifolds formed in said frame member; and

a pair of channels each thereof being formed in said frame member to communicate one of said manifolds with one of said microchannels;

said microchannel in said inlet section including a first hin-

drance portion and a second hindrance portion arranged in this order from the side of said inlet-section frame member channel;

said first hindrance portion including a plurality of wall-shaped projections;

said second hindrance portion including a stepped portion extending beyond said first hindrance portion in a thickness direction of said electrode and a plurality of projections arranged in a staggered manner over a whole surface of said stepped portion.

4,461,818

METHOD FOR MAKING PRINTING PLATES EMPLOYING AN ORGANIC PHOTO-CONDUCTIVE COMPOUND AND A STYRENE-MALEIC ANHYDRIDE HALF ESTER AS A BINDER

Shigeyoshi Suzuki; Koji Uchida; Jun Yamada, and Takao Senga, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills Ltd., Tokyo, Japan

Filed Sep. 24, 1982, Ser. No. 423,301

Claims priority, application Japan, Oct. 31, 1981, 56-175049

Int. Cl.³ G03G *13/26*

U.S. Cl. 430—49 **7 Claims**

1. A method for making a printing plate which comprises forming a toner image by electrophotography on a master plate which comprises a base and an organic photo-conductive compound-containing layer, the binder for said organic photo-conductive compound being an organic solvent soluble half ester resin of a styrene-maleic anhydride copolymer and then subjecting non-image areas other than the toner image areas to an etching treatment with a solution mainly composed of an alkali and/or an alcohol.

4,461,819

IMAGE-FORMING MEMBER FOR ELECTROPHOTOGRAPHY

Katsumi Nakagawa, Tokyo; Toshiyuki Komatsu, Kawasaki; Yutaka Hirai, Tokyo; Teruo Misumi, Toride, and Tadaji Fukuda, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 16,986, Mar. 2, 1979, abandoned. This application Jun. 3, 1981, Ser. No. 269,846

Claims priority, application Japan, Mar. 3, 1978, 53-24628; Mar. 14, 1978, 53-29030; Apr. 28, 1978, 53-51851

Int. Cl.³ G03G *5/14, 5/082*

U.S. Cl. 430—59 **59 Claims**

1. An image-forming member for electrophotography which comprises:

a charge generation layer for generating movable charge carriers upon excitation by electromagnetic waves, said charge generation layer being composed of hydrogenated amorphous silicon,

a charge transport layer into which charge carriers generated in said charge generation layer can be injected and which transports the injected charge carriers, said charge transport layer being composed of an organic photoconductive material, and

a substrate suitable for electrophotographic purposes on which said charge generation layer and charge transport layer are overlaid.

4,461,820

AMORPHOUS SILICON ELECTROPHOTOGRAPHIC IMAGE-FORMING MEMBER HAVING AN ALUMINUM OXIDE COATED SUBSTRATE

Shigeru Shirai, Yamato; Junichiro Kanbe, and Tadaji Fukuda, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1982, Ser. No. 344,794

Claims priority, application Japan, Feb. 6, 1981, 56-16413; Apr. 23, 1981, 56-62067; Apr. 24, 1981, 56-62181

Int. Cl.³ G03G *5/04*

U.S. Cl. 430—65 **24 Claims**

1. A electrophotographic image-forming member comprising (1) a substrate for electrophotography which has a surface coating of an aluminum oxide containing water chemi-structurally and (2) a photoconductive layer which is laid on said substrate, and comprises an amorphous material containing at least one of hydrogen atom and halogen atom in a matrix of silicon atom, said photoconductive layer containing at least one of oxygen atom, nitrogen atom, and carbon atom.

4,461,821

PHOTOCONDUCTIVE COMPOSITIONS AND ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MATERIALS COMPRISING AN ORGANIC PHOTOCONDUCTOR AND A THIOUREA COMPOUND

Kenji Sano; Syunichi Kondo, and Hideo Sato, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

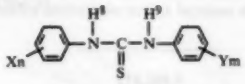
Filed Oct. 15, 1982, Ser. No. 434,659

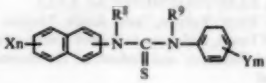
Claims priority, application Japan, Oct. 15, 1981, 56-165261

Int. Cl.³ G03G *5/04*

U.S. Cl. 430—83 **8 Claims**

1. A photoconductive composition comprising an organic photoconductor and a thiourea compound as shown by the following general formulae III to VIII:


(III)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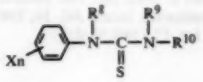
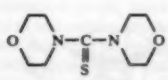
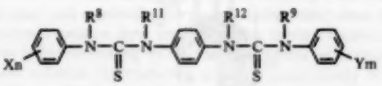
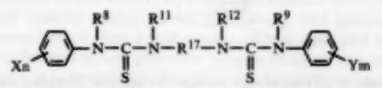

(V)


(VI)


(VII)


(VIII)

wherein,

R^8, R^9, R^{11}, and R^{12}, which may be the same or different, each represents a hydrogen atom, a straight chain or branched alkyl group having 1 to 5 carbon atoms, or a sustituted or unsubstituted phenyl group wherein the

number of the substituent is 1 to 3 and when the phenyl group has 2 or 3 substituents, they may be the same or different;

R^{10} represents a substituted or unsubstituted straight chain or branched alkyl group having 1 to 10 carbon atoms wherein the substituent of the alkyl group is a cyano group, a nitro group, or a halogen atom;

R^{13} represents a polymethylene group or an alkylene group, having 1 to 10 carbon atoms;

X and Y each is an electron attractive group and represents a substituted or unsubstituted straight chain or branched alkyl group having 1 to 5 carbon atoms, a methoxy group, an ethoxy group, a propoxy group, a methoxycarbonyl group, an ethoxycarbonyl group, a propoxycarbonyl group, a halogen atom, a cyano group, a nitro group, a carboxymethyl group, or a carboxyethyl group wherein the substituent of the substituted alkyl group is a cyano group, a nitro group, or a halogen atom;

m and n each represents 0, 1, 2, or 3;

when m and n each is O, X and Y both are hydrogen and do not represent any substituent;

when m and n each represents 2 or 3, the substituents may be the same or different; and

R^8, R^9, R^{10}, R^{11}, R^{12}, X, and Y may be the same or different.

4,461,822

PROCESS FOR TONING IMAGE-WISE MODIFIED SURFACES

Werner Abele, Neu-Isenburg, Fed. Rep. of Germany, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 15, 1983, Ser. No. 532,312

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1982, 3241732

Int. Cl.³ G03G *13/16*

U.S. Cl. 430—97 **8 Claims**

1. A process for increasing the color density or for changing the color tone of an image-wise modified surface which comprises applying consecutively to a tacky image at room temperature at least two different toners each toner containing at least one different organic compound having a polar substituent, and melting in the range of 25° to 110° C., said toners when in mutual contact make each other tacky.

4,461,823

MULTIPLE TRANSFER OF TACKY IMAGE AREAS USING PROLONGED TACK TONERS

Robert P. Held, Englishtown, N.J., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 124,605, Feb. 25, 1980, abandoned. This application Sep. 20, 1982, Ser. No. 420,512

Int. Cl.³ G03G *5/24*

U.S. Cl. 430—120 **20 Claims**

1. Process for image development of a substrate having a latent image, said image having toner-receptive and background areas, which comprises

(a) applying to the latent image dry particles of a prolonged tack toner to produce a nontacky toned image, the prolonged tack toner comprising a thermoplastic polymer, and a plasticizer or heat activatable tackifying agent for the polymer present in an amount greater than its compatibility level in the polymer,

(b) heating the toned image to a temperature sufficient to activate the toner by rendering the toner tacky,

(c) reducing the temperature of the image below the activating temperature of the prolonged tack toner wherein the activated prolonged tack toner remains tacky,

(d) further applying dry particles of prolonged tack toner to the tackified toned image, and

(e) repeating steps (b) through (d) at least one time to increase the density of the toned image on the substrate.

4,461,824

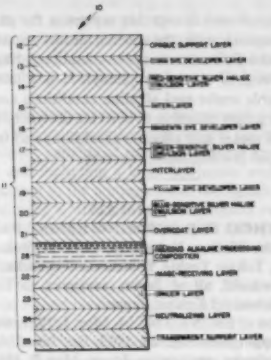
DIFFUSION CONTROL LAYERS IN DIFFUSION TRANSFER PHOTOGRAPHIC PRODUCTS

Avinash C. Mehta, Belmont, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 29, 1982, Ser. No. 454,447

Int. Cl.³ G03C *5/54, 7/00, 1/40, 7/20*

U.S. Cl. 430—215 **52 Claims**



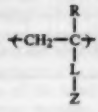
1. A photographic diffusion transfer film unit comprising:

a support layer;

a photosensitive silver halide emulsion layer having associated therewith a diffusion transfer process image-providing material;

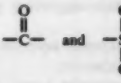
an alkaline processing composition permeable image-receiving layer; and

at least one diffusion control layer comprising a polymer having recurring units of the formula



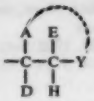
wherein R is hydrogen, halogen or lower alkyl; L is an organic divalent linking group; and Z is a cyclic β-elimination moiety capable under alkaline conditions of undergoing a β-elimination reaction and having the formula

wherein H is a labile proton abstractable under said alkaline conditions, Y is an activating group selected from



said activating group being effective to activate abstraction of said labile proton under said alkaline conditions and to thereby activate said β-elimination reaction, and A represents the atoms necessary with Y to complete a four- to seven membered ring structure, and D and E are independently hydrogen, methyl or phenyl, provided that not more than one of D and E is methyl or phenyl; or said

cyclic β-elimination moiety Z is a moiety having the formula



wherein A and E together represent the atoms necessary to complete with the carbon atoms to which they are bonded a five-, six- or seven-membered ring structure, D is hydrogen, methyl or phenyl, H is a labile proton abstractable under said alkaline conditions and Y is an activating group effective to activate abstraction of said labile proton under said alkaline conditions and to thereby activate said β-elimination reaction.

4,461,825

METHOD FOR FORMING RESIST PATTERN

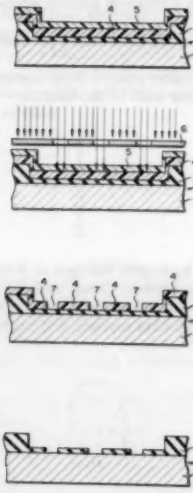
Tiharu Kato; Hatsuo Nakamura, both of Yokohama; Shigeo Koguchi, Tokyo; Toshio Yonezawa, Yokosuka, and Toshihiro Abe, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 374,064, May 3, 1982, abandoned. This application Sep. 26, 1983, Ser. No. 534,938

Claims priority, application Japan, May 7, 1981, 56-67658

Int. Cl.³ G03C *1/495, 1/76*

U.S. Cl. 430—273 **14 Claims**



1. A method of forming a photoresist pattern on a semiconductor substrate in a photo-engraving process, which comprises the steps of:

forming a positive photoresist layer on one major surface of the semiconductor substrate;

forming, on said photoresist layer, a non-photosensitive organic layer containing cyclized polyisoprene rubber as a major constituent, said cyclized polyisoprene having a degree of unsaturation of about 5.5 to about 7.5 mmol/g;

selectively exposing said photoresist layer through said organic layer through a photomask placed in contact with said organic layer;

developing said non-photosensitive organic layer with a first developer containing a surface-active agent to remove said organic layer; and

developing said photoresist layer with a second developer.

4,461,826

LIGHT-SENSITIVE COLOR PHOTOGRAPHIC MATERIAL

Kiyoshi Yamashita, and Toshifumi Iijima, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 12, 1982, Ser. No. 397,084

Claims priority, application Japan, Jul. 10, 1981, 56-106908; Dec. 11, 1981, 56-200477; Dec. 12, 1981, 56-200611

Int. Cl.³ G03C *1/46, 1/02*

U.S. Cl. 430—505 **20 Claims**

1. A silver halide light-sensitive color photographic material which comprises a support and coated thereon a light-sensitive layer containing a compound which, upon reaction with an oxidized color developing agent, is capable of releasing a diffusible development inhibitor and a negative type light-sensitive silver halide emulsion containing light-sensitive silver halide crystals consisting essentially of monodispersed silver halide crystals having a size distribution satisfying the following relationship:

$S/\bar{r} \leqq 0.15$; wherein

$S=\sqrt{\Sigma(r-r_i)^2 n_i^2/\Sigma n_i}$ and

$\bar{r}=\Sigma n_i r_i/\Sigma n_i$;

and wherein S represents the standard deviation, $\bar{r}$ represents the average crystal size, r_i represents the crystal size of individual silver halide crystals and n_i represents the number of crystals.

4,461,827

COLOR PHOTOGRAPHIC RECORDING MATERIAL CONTAINING A NON-DIFFUSIBLE DYE RELEASER FROM WHICH A COMPLEXIBLE AZO DYE IS RELEASED DURING DEVELOPMENT

Peter Bergthaller; Günther Schenk, both of Cologne, and Gerhard Wolfrüm, Leverkusen, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 3, 1983, Ser. No. 455,319

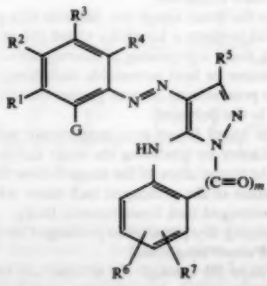
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1982, 3200705

Int. Cl.³ G03C *5/54, 7/00, 1/40*

U.S. Cl. 430—562 **2 Claims**

1. A colour photographic recording material for the production of coloured images by the dye diffusion transfer process, which material contains a non-diffusible colour-providing compound in association with at least one photosensitive silver halide emulsion layer, a diffusible azo dye complexible by metal ions being released from the colour-providing compound under alkaline development conditions as a function of the development of the silver halide emulsion layer, wherein the azo dye corresponds to the following formula:

(II)



in which

R^1, R^2, R^3 and R^4, which may be the same or different, represent H, F, Cl, Br, —CN, —NO_2, —CF_3, —OCF_3, —SCF_3, alkyl, alkoxy, alkylthio, acylamino, alkylsulphonyl, aryl sulphonyl, —CO—X or —SO_2—Y; or two adjacent radicals from the group of radicals R^1 to R^4 together represent a fused benzene ring;

R^5 represents H, alkyl, alkoxy, aryl, alkoxy carbonyl, carbamoyl or cyano,

R^6 and R^7, which may be the same or different, represent H, halogen, alkyl, —CF_3 or —SO_2Y,

G represents —OH or a hydrolysable precursor thereof,

X represents —OH, alkoxy, an amino group or a cyclic amino group,

Y represents H, —OH, an amino group, a cyclic amino group or a group of the formula —NH—SO_2—R^8 where R^8 represents alkyl, aryl, an amino group or a cyclic amino group, and

m=0 or 1.

4,461,828

SPECTRAL SENSITIZATION OF PHOTOTHERMOGRAPHIC ELEMENTS

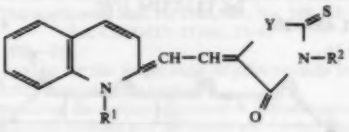
Kenneth W. Metz, North St. Paul; Vincent K. Rasbury, Cottage Grove, and Jack E. Reece, Forest Lake Township, Washington County, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 13, 1983, Ser. No. 494,264

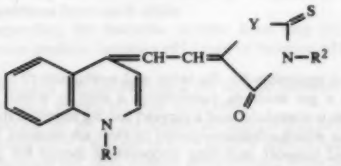
Int. Cl.³ G03C *1/02*

U.S. Cl. 430—592 **20 Claims**

1. A photothermographic emulsion comprising a binder, a non-light sensitive silver source material, photographic silver halide in catalytic proximity to said silver source material and a reducing agent for silver ion characterized by the presence of a spectrally sensitizing amount of a dye having either of the nuclei:



and



wherein

R^1 is selected from the group consisting of alkyl groups of 1 to 4 carbon atoms,

R^2 is selected from the group consisting of hydrogen, alkyl groups, aryl groups and cyclohexene,

Y is selected from the group consisting of S and

wherein R^3 and R^4 are independently selected from the group consisting of H, alkyl groups, and aryl group,

with the proviso that at least one of R^2, R^3 and R^4 is an acid substituted alkyl.

4,461,829

HOMOGENEOUS SPECIFIC BINDING ASSAY ELEMENT AND LYOPHILIZATION PRODUCTION METHOD

Alfred C. Greenquist, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Sep. 14, 1981, Ser. No. 302,218

Int. Cl.³ G01N *33/54, 33/52, 33/58*

U.S. Cl. 435—7 **12 Claims**

1. A test device for determining a ligand in, or the ligand binding capacity of, a test sample, the device comprising

a support member having a substantially planar side,

a carrier member affixed to the substantially planar side, the carrier member comprising a substantially bibulous material, and

a reagent system homogeneously incorporated with, but not bound to, the carrier member, the reagent system comprising ingredients capable of participating in a specific binding assay and including a label conjugate and a specific binding partner to the conjugate and the ligand, the conjugate comprising a label bound to the ligand or a specific binding analogue thereof, the conjugate and specific binding partner therefor being present in the carrier substantially unbound to one another.

8. A method for preparing a test device for determining a ligand in, or the ligand binding capacity of, a test sample, the method comprising the sequential steps of

incorporating a carrier member with a reagent system in a first solvent, the reagent system being capable of producing a detectable response to the presence of a label conjugate, and including a specific binding partner to the conjugate and a component capable of cleaving the label from the conjugate to produce a detectable response,

drying the carrier member, to remove the first solvent

cooling the dried carrier member to a temperature sufficient to substantially prevent the component from cleaving the label,

further incorporating the carrier member with the label conjugate in a second solvent, the conjugate comprising the label coupled to the ligand or specific binding analogue thereof, the label being a moiety cleavable by the component to produce a detectable response,

cooling the carrier member to a temperature sufficient to freeze the second solvent at a rate sufficient to prevent substantial cleavage of the label by the component, and lyophilizing the carrier member.

4,461,830

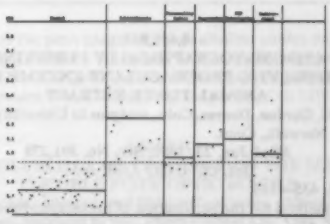
SERUM FIBRINOGEN VISCOSITY IN CLINICAL MEDICINE

Van B. Philpot, Jr., P.O. Box 312, Houston, Miss. 38851

Filed Jan. 20, 1983, Ser. No. 459,494

Int. Cl.³ G01N *33/48, 33/68, 33/86, 33/96*

U.S. Cl. 435—13 **16 Claims**



1. A method of diagnosing an abnormal body condition of a subject animal comprising the successive steps of:

(1) securing a sample of coagulant-free serum from the patient under study;

(2) adding a solution of purified, standardized fibrinogen to

a sample of the serum of step (1) and allowing the resulting mixture to incubate;

(3) measuring the viscosity of the mixture of step (2) to determine the serum fibrinogen viscosity;

(4) comparing the serum fibrinogen viscosity value measured in step (3) with a predetermined serum fibrinogen viscosity of a normal population of patients when treated under conditions similar to those of step (2); and

(5) diagnosing an abnormal body condition of said subject in accordance with the values compared in step (4).

4,461,831

ANTITUMOR AGENTS ALBACARCINS V AND M

James A. Matson, Fayetteville; Robert W. Myllymaki, Syracuse; Terrence W. Doyle, and James A. Bush, both of Fayetteville, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Aug. 16, 1982, Ser. No. 408,307

Int. Cl.³ C12P *17/18;* C12R *1/465;* A01N *31/00*

U.S. Cl. 435—119 3 Claims

1. A process for the production of the antibiotic, albacarcin M, which comprises cultivating *Streptomyces albaduncus* strain C 38291 (ATCC 39151) or an albacarcin M-producing mutant thereof in an aqueous nutrient medium containing assimilable sources of carbon and nitrogen under submerged aerobic conditions until a substantial amount of albacarcin M is produced by said organism in said culture medium and then recovering the albacarcin M from the culture medium substantially free of co-produced substances.

4,461,832

PREPARATION OF AN ENZYMATICALLY ACTIVE FORMULATION EMBEDDED IN SILICA GEL

Chung-Ji Tschang, Frankenthal; Heinrich Klefenz, Hochdorf-Assenheim; Axel Sanner, Frankenthal, and Wolfgang Zahn, Altrip, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 125,035, Feb. 27, 1980, abandoned. This application May 10, 1982, Ser. No. 376,597

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1979, 2911776

Int. Cl.³ C12N *11/14;* B01J *13/02*

U.S. Cl. 435—176 11 Claims

1. A process for the preparation of an enzymatically active formulation embedded in silica gel which comprises: suspending an aqueous mixture consisting of an enzymatically active formulation and a dissolved alkali metal silicate and/or ammonium silicate as droplets in a stirred organic, water-immiscible fluid and then converting said silicate to a water-insoluble gel.

4,461,833

CHROMATOGRAPHICALLY PURIFYING PROTEOLYTIC PROCOAGULANT ENZYME FROM ANIMAL TISSUE EXTRACT

Stuart G. Gordon, Denver, Colo., assignor to University Patents, Inc., Norwalk, Conn.

Filed Jun. 23, 1982, Ser. No. 391,278

Int. Cl.³ C12Q *1/38, 1/56*

U.S. Cl. 435—183 4 Claims

1. A method for the purification of proteolytic procoagulant enzyme from animal tissue extract containing the enzyme which comprises sequentially contacting the extract with a first benzamide affinity chromatographic resin, a 1.5M agarose filtration gel, a second benzamide affinity chromatographic resin, and a phenyl-sepharose hydrophobic chromatographic resin.

4,461,834

STRAIN OF *PSEUDOMONAS PAUCIMOBILIS*

Terrence I. Mudder, Piedmont, and James L. Whitlock, Spearfish, both of S. Dak., assignors to Homestake Mining Company, San Francisco, Calif.

Division of Ser. No. 486,610, Apr. 20, 1983, Pat. No. 4,440,644. This application Dec. 12, 1983, Ser. No. 560,362

Int. Cl.³ C12R *1/38;* C12N *1/20*

U.S. Cl. 435—253 1 Claim

1. A biologically pure culture of *Pseudomonas paucimobilis mudlock,* ATCC accession No. 39204.

4,461,835

PROCESS FOR PREPARING OPTICALLY-ACTIVE ISOPRENOID INTERMEDIATES

Charles J. Sih, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jul. 2, 1982, Ser. No. 394,970

Int. Cl.³ C07B *19/02;* C12R *1/38*

U.S. Cl. 435—280 15 Claims

1. A process for preparing optically active bifunctional synthons which comprises revolving aryloxy-α-alkyl esters by exposing said esters in aqueous medium to the hydrolytic action of the carboxyesterases elaborated by a microorganism of the orders Endomycetales and Eubacteriales whereby one antipode of said esters is hydrolyzed to give optically active aryloxy-α-methyl acids and recovering the component optically active isomers.

4,461,836

APPARATUS FOR THE SETUP AND EVALUATION OF DIFFUSION TESTS IN A GEL MEDIUM

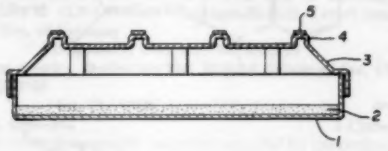
André Von Froreich, Föhrengrund 10, 2107 Rosengarten 5, Fed. Rep. of Germany

Filed Apr. 26, 1982, Ser. No. 371,680

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1981, 3116926

Int. Cl.³ C12M *1/28*

U.S. Cl. 435—294 6 Claims



1. An apparatus for the setup and evaluation of a diffusion test in a get medium, comprising: a dish in which said gel medium is contained, and a support having imperforate protrusions on which substance-coated carriers are secured, said dish and said support including cooperating means for precisely positioning said support, when inverted, atop said dish.

4,461,837

CONTAMINATION-FREE STERILIZATION INDICATING SYSTEM

David A. Karle, McKean, and Raymond C. Kralovic, North Springfield, both of Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed Sep. 30, 1981, Ser. No. 306,945

Int. Cl.³ C12M *1/24, 1/16, 1/18;* C12Q *1/22*

U.S. Cl. 435—296 1 Claim

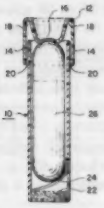
1. A biological indicating system for use in sterilization processes comprising:

a container having access means for providing a path of unobstructed fluid communication between the interior of said container and the surrounding environment outside;

test spores present within said container;

a medium adapted to induce growth of said spores, said medium being present in said container but out of effective contact with said spores;

a closure for said container access means, said closure being movable with respect to said access means from a first position, wherein said path of fluid communication is a tortuous path defined by a portion of the body of said



container and a portion of the body of said closure, and a second position, wherein said path of fluid communication is blocked by a sealing engagement between portions of said closure and portions of said container; and

means for bringing said medium into effective contact with said spores said effective contact being initiated by the movement of said closure to said second position.

4,461,838

GONOCOCCAL PILI PROCESSES FOR THE PREPARATION THEREOF AND THE USE THEREOF FOR THE DETECTION OF AND PREVENTION OF INFECTIONS CAUSED BY *NEISSERIA GONORRHOEAE*

Charles C. Brinton, Pittsburgh, and John C. McMichael, Imperial, both of Pa., assignors to Bactex, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 571,200, Apr. 25, 1975, abandoned. This application Sep. 18, 1980, Ser. No. 188,463

Int. Cl.³ G01N *31/00, 33/48*

U.S. Cl. 436—511 **17 Claims**

1. A process for the preparation of pilus crystals from *N. gonorrhoeae* comprising the steps of:

(a) suspending the culture of piliated *N. gonorrhoeae* cells in an aqueous medium at a pH below pH 9.2 and above pH 5.5,

(b) separating the soluble and the insoluble portions of said suspensions from each other,

(c) suspending the insoluble portion from step (b) in an aqueous medium having a pH range of between pH 7.7 to pH 11.0,

(d) separating the insoluble and the soluble portions of the suspension of step (c) from each other,

(e) lowering the pH of the soluble portion derived in step (d) to below pH 9.2 and above pH 4 to form pilus crystals, and

(f) separating the thus formed pilus crystals from the said aqueous medium.

4,461,839

COLORED TRANSPARENT, TRANSLUCENT AND OPAQUE GLASS-CERAMICS

Hermann L. Rittler, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 451,284, Dec. 20, 1982, abandoned. This application Dec. 1, 1983, Ser. No. 557,048

Int. Cl.³ C03C *3/22*

U.S. Cl. 501—4 **4 Claims**

1. A transparent, translucent, or opaque glass-ceramic article exhibiting colors ranging from black to brown to red and containing β-quartz solid solution as the predominant crystal phase, said glass-ceramic article being essentially free from MgO and consisting essentially, expressed in terms of weight percent on the oxide basis, of:

SiO_2	63.5–69	BaO	0–5
Al_2O_3	15–25	TiO_2	>2.5–6
Li_2O	2.5–4	ZrO_2	0–2
Na_2O	0.1–0.6	As_2O_3	0.4–0.8
K_2O	0.1–0.6	Fe_2O_3	0.05–0.2
ZnO	0–2		

and 0.3–3% total of at least two oxides in the indicated proportions selected from the group of 0–2% CaO, 0–3% CeO_2, 0–1% NiO, 0–1.5% SnO_2, 0–0.3% V_2O_5, and 0–1% WO_3.

3. An opaque glass-ceramic article exhibiting colors ranging from gray to brown to almond to beige to yellow to blue and containing β-spodumene as the predominant crystal phase, said glass-ceramic article being essentially free from MgO and consisting essentially, expressed in terms of weight percent on the oxide basis, of:

SiO_2	63.5–69	BaO	0–5
Al_2O_3	15–25	TiO_2	>2.5–6
Li_2O	2.5–4	ZrO_2	0–2
Na_2O	0.1–0.6	As_2O_3	0.4–0.8
K_2O	0.1–0.6	Fe_2O_3	0.05–0.2
ZnO	0–2		

and 0.3–3% total of at least two oxides in the indicated proportions selected from the group of 0–2% CaO, 0–3% CeO_2, 0–1% NiO, 0–1.5% SnO_2, 0–0.3% V_2O_5, and 0–1% WO_3.

4,461,840

HEAT RESISTANT GLASS FIBER COMPOSITION

Jean-Jacques Massol, 23 bis, rue Bokanowski, F92600 Asnieres, and Daniel Sainte-Foi, St. Germer, 56 rue Maurice Duchemin, 60600 Clermont, both of France

Filed Jul. 19, 1982, Ser. No. 399,317

Claims priority, application France, Jul. 20, 1981, 81 14060; Feb. 3, 1982, 82 01695

Int. Cl.³ C03C *13/00*

U.S. Cl. 501—36 **4 Claims**

1. Glass fiber characterized by a transformation temperature of at least 650° C. and by a liquidus temperature of from about 1230° C. to about 1330° C., and having a composition consisting essentially of the following ingredients in the following percentages by weight:

SiO_2	38 to 44%
Al_2O_3	17.5 to 22%
CaO	25 to 29%
MgO	0.1 to 5%
Fe_2O_3	0.5 to 2.5%
Na_2O	2 to 6%
K_2O	0.1 to 6%
Impurities	<3%

the sum of the percentages of earth-alkaline oxides being less than or equal to 34%, the sum of $SiO_2+Al_2O_3$ falls within the range of 58 to 62%, and the sum of the alkaline oxides Na_2O+K_2O is greater than 5% and less than or equal to 11%.

4,461,841

ACID-SOLUBLE GLASS COMPOSITION FOR MAKING FLEXIBLE FIBER OPTIC BUNDLE

Yuho Harada, Ohmiya, and Shigeo Kuwayama, Odawara, both of Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Sep. 14, 1981, Ser. No. 301,594

Claims priority, application Japan, Sep. 27, 1980, 55-134770

Int. Cl.³ C03C *13/00*

U.S. Cl. 501—37 **4 Claims**

1. An acid-soluble glass for use in manufacture of a flexible

fiber optic bundle having a composition expressed by mol percent consisting essentially of more than 15.0% and less than 41.0% of SiO_2, more than 29.0% and less than 54.0% of B_2O_3, more than 6.0% and less than 23.0% of BaO, and more than 5.0% and less than 19.0% of at least one alkali metal oxide selected from the group consisting of Na_2O, K_2O and Li_2O, the total amount of said SiO_2, B_2O_3 and BaO being more than 71.0% and less than 80.0%, and further comprising at least one component selected from the group consisting of not more than 12.0% ZnO, not more than 7.0% Al_2O_3, and not more than 5.0% of at least one of MgO, CaO and SrO.

4,461,842

CERAMIC COMPOSITE MATERIALS WITH HIGH MECHANICAL AND HEAT RESISTANCE AND THEIR PREPARATION

Jean Jamet, Janvry, France, assignor to Office National d'Etudes et de Recherches Aerospatiales (Par Abreviation O.N.E.R.A.), France

Filed Sep. 28, 1982, Ser. No. 425,623
Claims priority, application France, Oct. 20, 1981, 81 19692
Int. Cl.³ C04B *35/80*
U.S. Cl. 501—95 **8 Claims**

1. In ceramized composite materials comprising a reinforcing substrate formed of weavable ceramic fibres, with high thermomechanical properties, which have not undergone mechanical or chemical alteration, into which there has been introduced, by injection by the liquid route, a ceramic material precursor for the purpose of developing a matrix occupying at least the major part of the free space of the substrate, said matrix being formed from a ceramic oxide selected from the group consisting of silica (SiO_2), chromic oxide (Cr_2O_3) and magnesium oxide (MgO), and the cohesion of the oxide particles being such that it permits, under stress, a microfissurization which progresses to the level of the fibres, the improvement consisting in that they comprise at least one second matrix, or supermatrix constituted by an organic polymer, capable of reinforcing the cohesion of the matricial material, and the fibre-matrix bonds in the field of thermostability of the material used for the development of the supermatrix.

4,461,843

PROCESSES FOR PREPARING NOVEL BADDELEYITE REFRACTORY ARTICLES

Charles N. McGarry, Clarksville, Ind.; Janet Stunis, Louisville, Ky., and Thomas M. Wehrenberg, Jeffersonville, Ind., assignors to Corning Glass Works, Corning, N.Y.

Filed Sep. 9, 1982, Ser. No. 416,318
Int. Cl.³ C04B *35/48*
U.S. Cl. 501—102 **33 Claims**

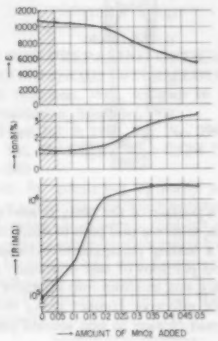
1. A process for producing a refractory article comprising:
providing a sinterable refractory composition of zirconium dioxide comprising:
a major proportion by weight of unmelted baddeleyite in the form of particles having effective particle sizes greater than about 5 microns;
an amount of a zirconia stabilizing composition effective to convert at least a portion of the zirconium dioxide in the refractory composition to a cubic phase during sintering;
a thermally decomposable composition, decomposable into an oxide of zirconium or an oxide of hafnium above about 100° C. and below a sintering temperature of the refractory composition, in an amount effective to improve the thermal shock resistance of said article;
forming said composition into a shape; and
heating said shape to a temperature and for a time sufficient substantially to sinter the shaped composition into said article.

4,461,844

CERAMIC COMPOSITION OF HIGH DIELECTRIC CONSTANT

Gen Itakura, Osaka, and Takayuki Kuroda, Hyogo, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 11, 1983, Ser. No. 483,610
Claims priority, application Japan, Sep. 20, 1982, 57-164643
Int. Cl.³ C04B *35/46, 35/50*
U.S. Cl. 501—137 **1 Claim**



1. A ceramic composition of a high dielectric constant, characterized by a microstructure of average grain size from about 2 to 3 microns and average pore size of not more than about 3 microns, in which 0.05 to 0.2 mol part of manganese dioxide (MnO_2) is present in a composition which consists of 100 mol parts of barium metatitanate ($BaTiO_3$), ($\frac{1}{3}$)(7 ± 1) mol parts of cerium dioxide (CeO_2), and 7 ± 1 mol parts of titanium dioxide (TiO_2).

4,461,845

REACTIVATION OF STEAM-DEACTIVATED CATALYSTS

Ralph M. Dessau, Edison, and George T. Kerr, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 17, 1983, Ser. No. 458,398
Int. Cl.³ B01J *37/22*
U.S. Cl. 502—27 **12 Claims**

1. A process for reactivating a catalyst composition comprising a crystalline zeolite material having a silicon/aluminum atomic ratio of at least about 2, said catalyst composition having been deactivated by contact with steam, which comprises the steps of
contacting said steam-deactivated catalyst composition with an aluminum compound at a temperature of from about 100° C. to about 850° C., and thereafter
contacting said aluminum compound contacted catalyst composition with an aqueous acid solution of from about 0.001 molar to about 10 molar at a temperature of from about 20° C. to about 100° C.

4,461,846

CATALYST DISPERSION HAVING IMPROVED STABILITY AGAINST PHASE SEPARATION

James J. Harris; Donald E. Hostetler, and G. Stanley Achorn, all of West Chester, Pa., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Mar. 28, 1983, Ser. No. 479,637
Int. Cl.³ C08F *4/64*
U.S. Cl. 502—105 **4 Claims**

1. In a process for forming a pre-activated catalyst component comprising:

(a) co-comminuting a magnesium halide, an aluminum halide, a titanium compound, optionally in the presence of at least one electron donor, and

(b) reacting the catalyst component from (a) with a small amount of an alpha-monoolefin having 4 to 12 carbon atoms in the presence of an alkyl aluminum compound to produce low molecular weight poly alpha-monoolefin on the catalyst component, the improvement comprising using for said alkyl aluminum compound in (b) a synergistic mixture of between 40 to 80 mole percent of an alkyl aluminum chloride and 20 to 60 mole percent of an oxygen-containing aluminum compound having oxygen attached to at least one aluminum valence, whereby said catalyst component and said inert solvent forms an extremely stable dispersion which will not separate into catalyst component and supernatant solvent in the normal times required to utilize the dispersion in the polymerization of ethylene or its copolymerization with alpha-monoolefins having 3 to 20 carbon atoms.

4,461,847

METHOD FOR PRODUCING THIN-WALLED ARTICLES FROM PLASTIC OR RUBBER

Slavko Hudecek; Jaroslav Hnidek; Viktor Heidingsfeld; Jan Kolarik, and Jiri Zelinger, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved., Prague, Czechoslovakia

Continuation of Ser. No. 837,144, Sep. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 496,370, Aug. 12, 1974, abandoned, which is a continuation of Ser. No. 210,401, Dec. 21, 1971, abandoned. This application Jan. 22, 1982, Ser. No. 341,905

Claims priority, application Czechoslovakia, Dec. 23, 1970, 8763-70

Int. Cl.³ C08D *5/20*

U.S. Cl. 521—27 **3 Claims**

1. An artificial leather for footwear and clothing comprising an unfoamed thin-walled material having a maximum thickness of 3 mm and a density in the range from 350 to 1500 kg/m^3 comprising a plastic or rubber carrier having uniformly dispersed within said carrier between 10 and 50 percent by weight of finely divided particles, below 50μ in size, of a polymeric ionic organic hydrophilic macromolecular filler, said polymeric filler being covalently crosslinked sufficient to render the same infusible and insoluble in said carrier, said filler being insoluble in water, said filler containing pendent polar groups selected from the group consisting of carboxylic and sulfonic groups in H^+, Na^+, K^+, Li^+, Ca^{++} and Ba^{++}, quaternary ammonium groups in OH^-, Cl^-, or SO_4H^- form, said polymeric filler being able to bind water reversibly and being selected from the group consisting of ethylene glycol monomethacrylatemethacrylic acid copolymer, the terpolymer of methacrylic acid, methacrylamide and ethylene glycol dimethacrylate, poly(acrylic acid), poly(methacrylic acid), and sulfonated styrene-divinylbenzene copolymers and having a minimum vapor binding capacity of 20 percent by weight of water based on the weight of said filler in the dry state.

4,461,848

PRODUCTION OF VESICULATED POLYMER BEADS

Edmund J. Lawson, and Charles G. Waterfield, both of Cleveland, England, assignors to Tioxide Group Plc., Stockton-on-Tees, England

Filed Oct. 29, 1982, Ser. No. 437,797

Claims priority, application United Kingdom, Nov. 20, 1981, 8135114

Int. Cl.³ C08G *53/08*

U.S. Cl. 521—64 **14 Claims**

1. A process for the manufacture of vesiculated polymer beads which comprises:

forming an oil phase (A) by dissolving a cross-linkable water-insoluble carboxyl containing polyester resin in a monomer copolymerisable with said resin;

forming an aqueous phase (B) by dissolving an emulsifying agent in an aqueous solution;

mixing phases (A) and (B) to form an emulsion of (A) in (B) in which 95% of the golubles of (A) so formed usually have a diameter of less than 1.5 microns, said emulsion also containing a base; and

polymerising the resin of the golubles to form the desired vesiculated beads in which process the amount of the emulsifying agent is from 3 to 16 grams per 100 ml. of (A), the total amount of the base is from 0.3 to 10 equivalents per carboxyl group of the resin, the volume fraction

$$(R) = \frac{\text{vol. of } (A)}{\text{vols. of } (A) + (B)}$$

has a value of 0.2 to 0.4, and the value of X in the relationship

$$X = \frac{R(\text{amount of emulsifying agent})}{(1 - 2R)}$$

is from 4 to 8.

4,461,849

VESICULATED BEADS

Michael Karickhoff, Matteson, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Jul. 26, 1983, Ser. No. 517,491

Int. Cl.³ C08G *53/08*

U.S. Cl. 521—64 **6 Claims**

1. A process for preparing an aqueous slurry of vesiculated, cross-linked polyester beads having improved scattering efficiency and resistance to shrinkage upon drying which process comprises:

(a) forming in the presence of a polyamine, as a water-in-oil emulsion, a stable dispersion of droplets of water in a solution of a carboxylic acid functional unsaturated polyester resin having an acid value of 8 to 20, and at least one ethylenically unsaturated monomer copolymerizable with the polyester; and

(b) forming in an aqueous solution, as a water-in-oil-in-water emulsion, a stable dispersion of the globules of the droplet-containing amine neutralized solution of the carboxylic acid functional unsaturated polyester and copolymerizable monomer; and

(c) polymerizing the polyester and copolymerizable monomer by free radical addition polymerization thereby producing granules of opaque, cross-linked vesiculated beads;

wherein the polyamine contains at least 3 amine groups per molecule; and wherein the amine is present at a concentration such that there are at least about 2.0 amine groups per each carboxylic acid group.

4,461,850

PROCESS FOR OBTAINING CELLULAR MATERIALS BASED ON UNSATURATED POLYESTER RESINS

Giancarlo Carignani, Rome; Aldo Cipriani, Colleferro, and Massimo Mazzola, Segni, all of Italy, assignors to Snia Viscosa Societa' Nazionale Industria Aplicazioni Viscosa SpA, Milan, Italy

Filed Jul. 9, 1981, Ser. No. 281,903

Claims priority, application Italy, Jul. 18, 1980, 23540 A/80

Int. Cl.³ B29D *27/00*

U.S. Cl. 521—91 **11 Claims**

1. In a process for obtaining cellular materials comprising unsaturated polyester resins, optionally containing reinforcing fibers, and having a density between 0.2 and 1.0 kg/l, by molding a pre-formed liquid foam in a mold made of two half-molds cooperating to close together to mold the pre-formed foam, said pre-formed liquid foam being obtained upstream of said

molding by mechanical introduction of gas by means of a turbine mixer into said unsaturated polyester resins optionally containing said reinforcing fibers with lengths less than 3 mm, the improvement wherein said pre-formed liquid foam is introduced into an open half-mold of said mold, optionally containing further reinforcing fibers, in an amount having a volume greater than the free volume of the mold when closed, the

Preformed Liquid Polymeric Resin Composition Produced in a Turbine Mixer by Introduction of a Gas with Mixing
Introduction of Foam Into a Half-Mold in an Amount Greater than the Free Volume of the Mold
Closing the Mold with Other Half of Mold and Forming Final Cellular Products Under Pressure
Cross-Linking the Preformed Resin within the Mold

volume of the liquid foam being selected so as to achieve upon subsequent closure of the mold a pressure therein between 2 and 11 absolute atmospheres, then closing the mold by the other said half-mold so as to create said pressure within the mold, and subsequently crosslinking the resin within the mold under said pressure conditions.

9. Cellular material comprising unsaturated polyester resins, produced by the process according to claim 1.

4,461,851

FOAM-FORMING ORGANOPOLYSILOXANE COMPOSITION

Mitsuyoshi Hashimoto, Horiguchi, Japan, assignor to General Electric Company, Waterford, N.Y.

Filed Aug. 26, 1983, Ser. No. 527,154

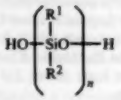
Claims priority, application Japan, Sep. 8, 1982, 57-156399

Int. Cl.³ C08F *4/44*

U.S. Cl. 521—110 **11 Claims**

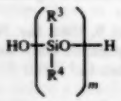
1. A foam-forming organopolysiloxane composition comprising:

(A) 100 parts by weight α,ω diorganopolysiloxane diol having the general formula:



where R^1 and R^2 are monovalent hydrocarbon radicals or substituted monovalent hydrocarbon radicals, and n ranges from 200 to 3000;

(B) 0.05 to 50 parts by weight α,ω-diorganopolysiloxane diol having the general formula:



where R^3 and R^4 are monovalent hydrocarbon radicals or substituted monovalent hydrocarbon radicals, and m ranges from 2 to 46;

(C) 0.5 to 30 moles of Si-H groups per mole of silanol groups in (A) and (B) as an organohydrogenpolysiloxane having at least two Si-H groups permolecule and having the general formula:

$$R_a^5H_bSiO\frac{4-(a+b)}{2}$$

where R^5 is a saturated monovalent hydrocarbon radical, a is a number varying from 0 to 2 inclusive, b is a number varying from 1 to 3 inclusive, and a+b varies from 1 to 3 inclusive; and

(D) 0.1 to 200 ppm of a platinum-containing compound to catalyze the dehydrogenation reaction of (A), (B) and (C).

4,461,852

PHENOLIC RESIN FOAM AND PROCESS FOR PRODUCING THE SAME

Tsutomu Nakamura, Saitama; Akira Kuroda, Narashino; Masatoshi Onishi, Yokohama, and Tetsuo Sasaki, Tokyo, all of Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 11, 1983, Ser. No. 512,776

Claims priority, application Japan, Sep. 7, 1982, 57-154618; Apr. 22, 1983, 58-69970

Int. Cl.³ C08G *18/32*; C08J *9/00*

U.S. Cl. 521—121 **19 Claims**

1. A benzylic ether type phenol-formaldehyde resin foam comprising a reaction product of a mixture comprising:

(A) 100 parts by weight of at least one benzylic ether type phenol-formaldehyde resin;

(B) 1 part to 50 parts by weight of a blowing agent;

(C) 5 parts to 150 parts by weight of a hardening agent consisting of at least one aromatic sulfonic acid compound;

(D) 1 part to 50 parts by weight of a polyisocyanate component consisting of at least one polyisocyanate compound; and

(E) 0.1 part to 100 parts by weight of water, wherein said polyisocyanate component and said hardening agent contained in said mixture are in amounts satisfying the relationship

$$0.1 \leq [NCO]/[SO_3H] \leq 1.0$$

wherein [NCO] represents the gram equivalent of NCO groups in the polyisocyanate compound molecules and $[SO_3H]$ represents the gram equivalent of SO_3H groups in the aromatic sulfonic acid compound molecules.

4,461,853

CONTROLLABLY DEGRADABLE POLYMER COMPOSITIONS

Dan Gilead, Kibbutz Hazorea, Israel, and Gerald Scott, 338 Station Rd., Knowle, Solihull, West Midlands B93 OET, England

Continuation of Ser. No. 304,663, Sep. 22, 1981, abandoned, which is a continuation of Ser. No. 940,726, Sep. 8, 1978, abandoned. This application Jun. 13, 1983, Ser. No. 503,629

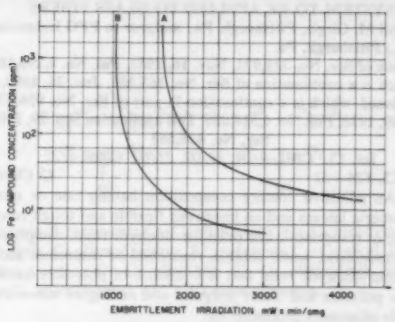
Claims priority, application Israel, Sep. 21, 1977, 52974

Int. Cl.³ C08K *5/47, 5/43, 5/39, 5/34*

U.S. Cl. 523—126 **8 Claims**

1. Plastic composition which is controllably degradable by photooxidation which comprises a vinyl polymer, at least one first complex comprising a non-ionic organosoluble antioxidant complex of iron with a chain-breaking, peroxide-decomposing, metal ion deactivating or ultraviolet light stabilizing compound selected from the group consisting of a dithiocarbamate, dithiophosphate, xanthate, cyclic phosphate, oxime, benzthiazole and benzimidazole, and such that the iron complex is a photoactivator and is present in a concentration of about 0.0005 to 0.5% by weight, and at least one second complex comprising a non-ionic organosoluble ultraviolet light

stabilizing complex of nickel or cobalt with a chain-breaking, peroxide-decomposing, metal ion deactivating or ultraviolet light stabilizing compound selected from the group consisting of a dithiocarbamate, dithiophosphate, xanthate, cyclic phosphate, oxime, benzthiazole and benzimidazole, and such that the nickel or cobalt complex is a photostabilizer and is present in a concentration of about 0.01 to 0.5% by weight, the concentrations of the iron complex and nickel or cobalt complex being independently varied relative to each other yet coordinated to produce a controllably desired ultraviolet photodegradation embrittlement time for the composition, which embrittlement time is capable of being retarded or delayed by controlling the length of the induction period defining the interval between the start of exposure to photodegrading ultra-



violet light and the point at which ultraviolet photodegradation by photooxidation begins in dependence upon the controllable amount of the nickel or cobalt complex in relation to the amount of the iron complex, and which composition upon reaching the end of the induction period and the point at which ultraviolet photodegradation by photooxidation begins is capable of undergoing photodegradation at a correspondingly comparatively rapid photooxidation rate to ultimate embrittlement in dependence upon the controllable amount of the iron complex in relation to the amount of the nickel or cobalt complex, said composition being such that at a concentration ratio by weight of about 1:1 of the nickel or cobalt complex to the iron complex the embrittlement time thereof is at least about 125 hours after exposure to photodegrading ultraviolet light.

4,461,854

ROOM TEMPERATURE VULCANIZABLE POLYSILOXANE HAVING A HEAT-ACTIVATED CATALYST

Robert A. Smith, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Aug. 11, 1982, Ser. No. 407,017
Int. Cl.³ C08L 83/06
U.S. Cl. 523—211 **37 Claims**

1. A two-component room temperature vulcanizable polysiloxane composition curable in the presence of a heat-activated catalyst comprising:

(A) 100 parts by weight of a mixture comprised of:

(i) an organopolysiloxane containing terminal silicon-bonded hydroxy groups;

(ii) optionally, a cross linking-agent; and

(iii) optionally, a filler; and

(B) about 5 to about 15 parts by weight of a catalyst-containing component comprised of:

(iv) a catalyst comprising a metallic salt of an organic carboxylic acid in which the metal ion is selected from the group consisting of lead to manganese in the periodic table of the elements, the catalyst being in combination with a solid, inert barrier material which is a metallic salt of an orgaic carboxylic acid in which the metal ion is selected from the group consisting of zinc, cobalt, manganese, nickel and calcium, which in combination with the organic carboxylic acid radical does not promote catalytic action at room temperature, but which solid, inert barrier material is capable of melting at elevated temperature, whereby the catalyst is activated when heat applied thereto melts the solid barrier material;

(v) about 1.5 to about 20.0 weight percent of component (B) of a cross-linking agent;

(vi) about 5 to about 50 weight percent of component (B) of a filler; and

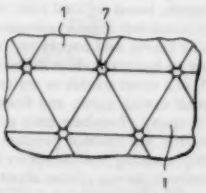
(vii) about 5.0 to about 50.0 weight percent of component (B) of a polyorganosiloxane having no silanol-stopped terminal groups.

4,461,855

RESIN COMPOSITE REINFORCED WITH FIBERS HAVING A FLAT-SIDED TRIANGULAR SHAPE

Leslie N. Phillips, Farnborough, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation of Ser. No. 294,554, Aug. 20, 1981, abandoned. This application Mar. 1, 1983, Ser. No. 471,151
Claims priority, application United Kingdom, Aug. 28, 1980, 8027842
Int. Cl.³ B32B 9/00; C08K 3/04; D02G 3/00
U.S. Cl. 523—222 **4 Claims**



1. A composite material comprising reinforcement fibers and a resin matrix material, said composite comprising up to 70% fibers, said fibers having a tensile strength greater than 0.5 GPa and a Young's Modulus greater than 50 GPa, and having a greatest cross-sectional dimension of about 100 μm or less, said fibers having a cross-sectional shape which is triangular, each side of said fibers being flat, the sides of least some of the fibers contacting and adhering to the sides of adjacent fibers, so that at least some of the fibers are aggregated in clusters, at least some of the fibers being aggregated in hexagonal clusters.

4,461,856

AQUEOUS HYDRAULIC CEMENT SLURRY

Stephen B. Willis, Lake Jackson, and Pamela J. Boyce, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 3, 1983, Ser. No. 548,475
Int. Cl.³ C04B 7/35, 25/06
U.S. Cl. 523—401 **4 Claims**

1. In aqueous hydraulic cement slurry compositions comprising water, hydraulic cement, surfactant and polyalkylenepolyamine fluid loss additive; the improvement which comprises employing as said fluid loss additive, at least one composition prepared by reacting

(A) at least one composition prepared by reacting

(1) a polyalkylenepolyamine composition having an average molecular weight of from about 60 to about 500 with

(2) at least one alkylene dihalide with

(B) at least one of

(2) an epihalohydrin or dihalohydrin,

(2) an adduct of
(a) an epihalohydrin or dihalohydrin and
(b) an alkylenediamine, polyalkylenepolyamine having an average molecular weight of from about 60 to about 500 or mixtures thereof or
(3) mixtures thereof; and wherein
(C) component (A-1) and component (A-2) are reacted in quantities such that the quantity of A-2 used is less than the amount need to form a gel by an amount (expressed as weight of carbon and hydrogen contained in A-2) of from about 0.8% to about 5% of the weight of carbon plus hydrogen plus nitrogen present in the reaction mixture when a gel would be formed;
(D) components (A) and (B) are employed in quantities which provide a polyamine which gives a fluid loss of less than 60 ml, according to the API RP 10B fluid loss test described in the examples.

4,461,857

THERMOSETTING AQUEOUS COATING COMPOSITIONS CONTAINING EPOXY-PHOSPHATE DISPERSIONS

Kazys Sekmakas, Palatine, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 428,275, Sep. 29, 1982, Pat. No. 4,425,451. This application Oct. 31, 1983, Ser. No. 547,231

Int. Cl.³ C08G *59/14;* **C08L** *63/00*

U.S. Cl. 523—414 **9 Claims**

1. An aqueous thermosetting coating composition comprising water containing water miscible organic solvent and having dispersed therein, based on total resin solids, from 25% to 85% of carboxy-functional organic solvent-soluble copolymer salt with a volatile amine, said copolymer containing hydroxy groups providing an hydroxyl value in the range of 30 to 300, from 5% to 40% of a water soluble or water dispersible aminoplast or phenoplast curing agent, and from 2% to 35%, of a water dispersible epoxy phosphate ester polymer which is an oxirane-function-free, salt reaction product of (1) a monoester reaction product containing residual epoxy functionality, of (a) a resinous polyepoxide having at least about 1.4 oxirane groups per molecule, and (b) less than 0.9 mole of orthophosphoric acid for each oxirane equivalent in the polyepoxide, with (2) at least 1 mole of a volatile amine per equivalent of oxirane functionality in the monoester.

4,461,858

POLYVINYLALCOHOL/MELAMINE-FORMALDEHYDE INTERACTION PRODUCTS

Robert L. Adelman, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 147,057, May 16, 1980, abandoned. This application Nov. 19, 1981, Ser. No. 323,053

Int. Cl.³ C08L *3/10*

U.S. Cl. 524—49 **16 Claims**

1. A process for preparing stable aqueous solution of cationic polyvinyl alcohol/melamine-formaldehyde resin interaction product comprising
(a) preparing cationic melamine-formaldehyde resin acid colloid,
(b) contacting said melamine-formaldehyde resin acid colloid with polyvinyl alcohol polymer by a method selected from the group consisting of
(I) mixing said melamine-formaldehyde resin acid colloid with aqueous polyvinyl alcohol solution at ambient or elevated temperature for a sufficient time to yield said polyvinyl alcohol/melamine-formaldehyde resin interaction product at the given temperature, and
(II) slurrying polyvinyl alcohol powder or granules in the melamine-formaldehyde resin acid colloid and heating and stirring at a temperature of from about 80° to about 95° C. until the polyvinyl alcohol is dissolved,
provided, that there is sufficient water present to give a solids content of from about 0.7% by weight up to a level that will not cause gelation to a stage of no flow under the force of gravity in 48 hours, but not in excess of 6% by weight, the polyvinyl alcohol/melamine-formaldehyde resin acid colloid weight ratio, on a dry basis, being from about 0.4/1 to about 5/1.

4,461,859

METHOD OF PREPARING A PHENOLIC ALDEHYDE RESIN AND RESIN COMPOSITION FOR AN ADHESIVE SYSTEM TO BE APPLIED TO GLASS FIBERS

Mikhail M. Girgis, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 321,971, Nov. 16, 1981, Pat. No. 4,393,189, which is a continuation of Ser. No. 163,355, Jun. 26, 1980, abandoned, which is a continuation-in-part of Ser. No. 956,473, Oct. 30, 1978, Pat. No. 4,314,050. This application Sep. 29, 1982, Ser. No. 426,588

Int. Cl.³ C08L *9/04, 19/02, 21/02;* **C08G** *8/22*

U.S. Cl. 524—62 **13 Claims**

1. An adhesive coating composition having one or more elastomeric latexes and an improved flexible and tough resorcinolic or resorcinolic and phenolic aldehyde resin, comprising a thermoplastic, water soluble, resorcinol or resorcinol and a phenolic aldehyde resin that is a mixture of polymers having trimer polymer and dimer polymer and no higher non-water soluble oligomers produced by:
a. reacting to less than 100 percent completion a resorcinol or resorcinol and phenolic compound with an aldehyde in an amount of aldehyde to resorcinol or aldehyde to mixture of resorcinol and phenolic compound in mole ratio in the range of about 0.8 to about 1.5 and at a pH in the range of 3.5 to about 5.5 to limit formation of resorcinol and phenolic alcohols and for a period of time equivalent to a period of time in the range of about 3 hours to about 10 hours at a temperature in the range of about 55° F. (13° C.) to about 90° F. (32° C.) to produce a resinous polymer mixture along with unreacted resorcinol or resorcinol and phenolic compound and aldehyde in the polymer mixture, and
b. continuing the resin reaction at a pH maintained above 7 to about 7.5 at a temperature in the range of 55° F. (13° C.) to 90° F. (32° C.) when the residence time is in the range of 0.75 hours to about 10 hours thereby producing a thermoplastic, water soluble, resorcinolic or resorcinolic and phenolic aldehyde resin mixture with improved flexibility and with toughness, since it has a substantial amount of trimer and dimer polymers without any higher oligomers and has only slight cross-linking and is capable of further reaction,
wherein the resin mixture is present in an amount between about 5 and about 50 parts resin per 100 parts elastomeric latex solids.

4,461,860

CONDUCTIVE POLYMER COMPOSITION

Van C. Vives, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 7, 1983, Ser. No. 483,012

Int. Cl.³ C08K *3/04*

U.S. Cl. 524—80 **25 Claims**

15. A composition comprising a poly(arylene sulfide) and iodine.

4,461,861

POLYMER COMPOSITIONS STABILIZED WITH TRIAZINYL-PIPERIDINE COMPOUNDS

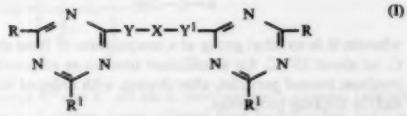
Frank F. Loffelman, Bridgewater, and Thomas E. Brady, Whitehouse Station, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 285,240, Jul. 20, 1981, Pat. No. 4,400,505. This application Jun. 6, 1983, Ser. No. 501,218

Int. Cl.³ C08K 5/16

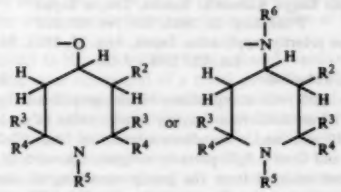
U.S. Cl. 524—100 7 Claims

1. A method of stabilizing a polymer which is normally subject to degradation by ultraviolet radiation which comprises incorporating into said polymer an ultraviolet radiation stabilizingly effective amount of a compound of the formula (I)

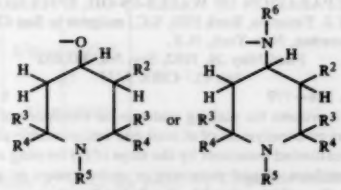


(I)

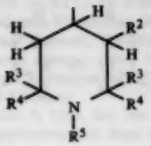
wherein R represents C_3–C_6 alkenyloxy, C_3–C_6 alkenylamino, or di(C_3–C_6 alkenyl)amino; R^1 represents C_1–C_8 alkyl, C_1–C_8 alkoxy, halo, C_1–C_8 alkylthio, C_3–C_6 alkenyloxy, amino, C_3–C_6 alkenylamino, di(C_3–C_6 alkenyl)amino,



wherein R^2, R^3, R^4, R^5, and R^6 are as defined below, C_1–C_{18} alkylamino, C_1–C_{18} dialkylamino, morpholino, piperidino, pyrrolidyl, a substituted C_1–C_{18} alkylamino, or a substituted C_1–C_{18} dialkylamino, wherein the substituents are selected from amino, cyano, carboxy, alkoxycarbonyl wherein the alkoxy moiety has 1 to 8 carbon atoms, and the groups



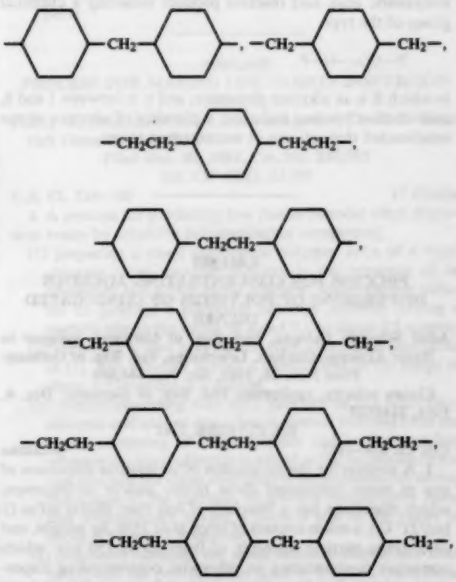
wherein R^2 represents hydrogen, C_1–C_8 alkyl, or benzyl; R^3 and R^4 independently represent C_1–C_8 alkyl, benzyl, or phenethyl, or together with the carbon to which they are attached form a C_5–C_{10} cycloalkyl; and R^5 represents hydrogen, C_2–C_3 hydroxyalkyl, C_1–C_8 alkyl, hydroxyl, or oxyl; R^6 rerepsents hydrogen, C_1–C_8 alkyl, or



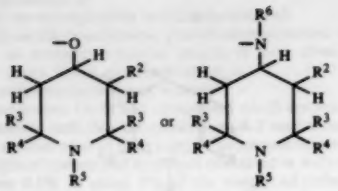
wherein R^2, R^3, R^4, and R^5 are as previously defined; Y and Y^1, which may be the same, or different, represent oxy, or

wherein R^6 is as previously defined; X represents C_2–C_{12} alkylene, wherein the alkylene chain may be interrupted by an oxy, thio, or

radical, C_5–C_{10} cycloalkylene,



C_6–C_{12} arylene, or C_8–C_{14} aralkylene; with the proviso that when Y and Y' are oxy, or R^6 is hydrogen, or C_1–C_8 alkyl, at least one R^1 is, or contains



and with the further proviso that R and R^1 are not allyloxy at the same time.

4,461,862

SELF EXTINGUISHING POLYMERIC COMPOSITIONS, WHICH UPON CONTACTING A FLAME PROVIDE A NONDROPPING CHAR-FORMING INCANDESCENT CRUST, AND WHICH DO NOT PRODUCE FLAME NEITHER TOXIC FUMES

Ludwig Eigenmann, P.O. Box 8, CH 6833 Vacallo, Switzerland

Filed May 27, 1981, Ser. No. 267,571

Claims priority, application Switzerland, Jun. 2, 1980, 4250/80; Jan. 14, 1981, 200/81

Int. Cl.³ C08K *5/52*

U.S. Cl. 524—101 **11 Claims**

1. Flame retardant polymeric compositions which upon contacting a flame, provide an intumescent char-forming crust, which are non-dripping and promote neither flame nor toxic fumes, comprising in 100 parts by weight of a thermoplastic polymer, from 5 to 40 parts by weight of a reaction product between an acid of phosphorus and hydroxyalkyl derivative of isocyanuric acid, said reaction product including a chemical group of the type

$$N-(R)_{n'}-O-P$$

in which R is an alkylene derivative, and n' is between 1 and 6, said reaction product including a plurality of nitrogen atoms interbonded through one or more carbon atoms.

4,461,863

PROCESS FOR CONCENTRATING AQUEOUS DISPERSIONS OF POLYMERS OF CONJUGATED DIENES

Adolf Schmidt, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 24, 1982, Ser. No. 444,068

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1981, 3148105

Int. Cl.³ C08K *5/42*

U.S. Cl. 524—157 **6 Claims**

1. A process for the production of an aqueous dispersion of one or more conjugated diene homo- and/or co-polymers, which dispersion has a viscosity of less than 50,000 mPas (1 bar/22° C.), a solids content of from 35 to 55%, by weight, and an average particle diameter of from 20 to 150 nm, which comprises concentrating an otherwise corresponding dispersion, which is free from alkane polysulphonate salts and has a lower solids content, in the presence of from 0.05 to 5%, by weight, based on the solids content thereof, of one or more water-soluble salts of one or more alkane polysulphonates.

4,461,864

METHOD FOR REDUCING BLOCK OF ETHYLENE INTERPOLYMERS CONTAINING —COOH GROUPS

David P. Flores, and James A. Allen, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 332,435, Dec. 21, 1981. This application Sep. 27, 1982, Ser. No. 423,959

Int. Cl.³ C08K *5/09*

U.S. Cl. 524—322 **4 Claims**

1. A method for reducing the tendency for particles of an interpolymer of ethylene and a polymerizable ethylenically unsaturated monomer containing carboxyl groups to block and stick, which method comprises treating by contacting said particles with sufficient quantities of a solution containing a carboxylic acid having the general formula

wherein R is an alkyl group at a temperature of from about 0° C. to about 85° C. for a sufficient time so as to provide the resultant treated particles, after drying, with reduced blocking and/or sticking properties.

4,461,865

ABS RESIN COMPOSITION

Tetsuro Maeda; Yasuo Yoshii; Akihiro Okamoto, and Isamu Nishinakagawa, all of Ichihara, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 13, 1982, Ser. No. 407,893

Claims priority, application Japan, Aug. 31, 1981, 56-135507

Int. Cl.³ C08K *3/08*

U.S. Cl. 524—440 **9 Claims**

1. An ABS resin composition which comprises 100 parts by weight of an ABS resin having a melt index of at least 4.0 grams/10 min. and a butadiene content of from 10–24% by weight and from 0.5–30 parts by weight of powder of at least one metal selected from the group consisting of aluminum, copper and a copper alloy and wherein said ABS resin comprises 70–14% by weight of an ABS resin having a melt index of not more than 1.0 grams/10 min. and a butadiene content of from 30–70% by weight, and from 30–86% by weight of an AS resin having a melt index of at least 6.0 grams/10 min.

4,461,866

PREPARATION OF WATER-IN-OIL EMULSIONS

Michael J. Yanutola, Rock Hill, S.C., assignor to Sun Chemical Corporation, New York, N.Y.

Filed May 24, 1982, Ser. No. 381,032

Int. Cl.³ C08K *3/34*

U.S. Cl. 524—779 **9 Claims**

1. In a process for making water-in-oil emulsions of homopolymers or copolymers of at least one water-soluble ethylenically unsaturated monomer by the steps of (1) forming a water-in-oil emulsion of said monomer or comonomers or aqueous solution thereof in an inert hydrophobic liquid organic dispersion medium containing an emulsifying agent and (2) heating said emulsion under free radical-forming conditions to polymerize said monomer or comonomers in a disperse phase, the improvement which consists of including sodium silicate combined with a metal halide in the aqueous phase of said water-in-oil emulsion.

4,461,867

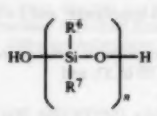
COMPOSITION FOR PROMOTING ADHESION OF CURABLE SILICONES TO SUBSTRATES

Richard P. Surprenant, Troy, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Sep. 27, 1982, Ser. No. 424,268
Int. Cl.³ C08K 3/14
U.S. Cl. 524—788 41 Claims

18. A self-bonding, moisture curable, one package room temperature vulcanizable silicone composition which in the cured solid elastic state exhibits low tensile strength, high percent elongation and superior adhesion to substrates, said composition comprising:

(a) 100 parts by weight of a silanol chain-stopped polydiorganosiloxane of the formula:



wherein R^6 and R^7 are each, independently, organic radicals of up to 8 carbon atoms selected from hydrocarbyl, halohydrocarbyl and cyanoloweralkyl and n is an average number of from about 10 to 15,000;

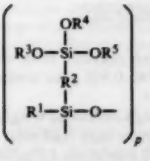
(b) from 0.01 to 5.0 parts by weight of a cross-linking silane of the formula:

$$R^8{}_mSi(OR^9)_{4-m}$$

wherein R^8 and R^9 have the values defined for R^6 and R^7 above and m has a value of 0 to 3 and an average value based on the total amount of silane in the composition of 0 to 1.99; and

(c) from 0.1 to 10 parts by weight of a silanol-reactive organometallic ester compound of a metal other than silicon, the compound having radicals attached to the metal atom, at least one of said radicals being a hydrocarbonoxy radical or a substituted hydrocarbonoxy radical, said radicals being attached to the metal atoms through M—O—C linkages wherein M is the metal and any remaining valences of the metal are satisfied by substituents selected from organic radicals attached to the metal atoms through M—O—C linkages, —OH, and —O— of a M—O—M linkage, the weight ratio of components (c) to (b) always being greater than 0.5 to 1; and

(d) from about 0.2 to 2 parts by weight of an adhesion promoter composition per 100 parts of component (a), said adhesion promoting composition comprising at least one diorganocyclopolysiloxane compound of the formula:



wherein R^1 is C_1–C_6 alkyl, C_1–C_6-gamma-trihaloalkyl or phenyl; R^2 is alkylene of from 2 to 6 carbon atoms; R^3, R^4, and R^5 are, independently, C_1–C_6 alkyl or C_2–C_6 alkanoyl and p is either 3 or 4.

27. An RTV silicone composition as recited in claim 18, further comprising as component (e) a filler selected from the group consisting of calcium carbonate, fumed silica and mixtures thereof.

4,461,868

MIXTURE OF A THERMOPLASTIC POLYMER OF AN ALKYL METHACRYLATE AND A GRAFT POLYMER OF METHYL METHACRYLATE ONTO CROSSLINKED ALKYL ACRYLATE RUBBER

Christian Lindner, Cologne; Karl-Heinz Ott; Horst Peters, both of Leverkusen; Josef Buekers, Krefeld, all of Fed. Rep. of Germany, and Dieter Neuray, New Martinsville, W. Va., assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Filed Mar. 9, 1983, Ser. No. 473,756
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1982, 3210284
Int. Cl.³ C08L 69/00, 51/04
U.S. Cl. 525—67 8 Claims

1. Mixtures comprising

(a) homopolycarbonates and copolycarbonates which are based on one or more diphenols selected from hydroquinone, resorcinol, dihydroxydiphenyls, bis-(hydroxyphenyl)-alkanes, bis-(hydroxyphenyl)-cycloalkanes, bis-(hydroxyphenyl) sulphides, bis-(hydroxyphenyl) ethers, bis-(hydroxyphenyl) ketones, bis-(hydroxyphenyl) sulphoxides, bis-(hydroxyphenyl) sulphones, α,α-bis-(hydroxyphenyl)-diisopropyl-benzenes, and compounds thereof which are halogenated in the nucleus, said polycarbonate having a weight average molecular weight of 10,000 to 200,000;

(b) thermoplastic polymers of C_1 to C_4-alkyl methacrylates having a weight average molecular weight of 10,000 to 1,000,000 measured in dimethylformamide at 25° C.;

(c) particulate graft polymers of methyl methacrylate onto a particulate, highly crosslinked alkyl acrylate rubber wherein the weight ratio of grafted monomers:alkylate rubber base is between 20:80 and 80:20;

characterized in that component (a) is present in amounts of 75 to 45 parts by weight, component (b) is present in amounts from 10 to 40 parts by weight and component (c) is present in amounts from 15 to 45 parts by weight, with the proviso that the sum of (a), (b) and (c) parts is 100 parts.

4,461,869

PROCESS FOR MAKING LOW FUSION DISPERSION RESINS

Henry W. Yang, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Dec. 30, 1981, Ser. No. 335,793
Int. Cl.³ C08L 33/08
U.S. Cl. 525—80 17 Claims

1. A process for producing low fusion bimodal vinyl dispersion resins by emulsion polymerization comprising,

(1) preparing a small component polymer latex of a vinyl chloride in an aqueous medium in the presence of an emulsifier and a free radial yielding, water-soluble initiator to produce a polyvinyl chloride polymer having a particle size in the range of about 0.1 to about 0.5 micron;

(2) preparing a seed polymer or vinyl chloride as described in (1), said polymer having a particle size in the range of about 0.3 to about 0.7 micron;

(3) overpolymerizing said seed polymer of (2) with vinyl chloride and at least one other monomer selected from the group consisting of ethyl acrylate and methyl acrylate wherein the vinyl chloride is added at the beginning of the reaction and the other monomer is proportioned in during the course of the reaction, to give an overpolymer latex, said overpolymer having a particle size in the range of about 0.5 about 1.5 micron;

(4) intimately blending the small component polymer latex of (1) and the overpolymer latex of (3), said latex blend containing from about 10% to about 40% of (1) and from about 90% to about 60% of (3); and

(5) drying said latex blend and recovering the bimodal vinyl dispersion resin in dry powder form.

4,461,870

HIGH SOLID COATING COMPOSITION CONTAINING NOVEL MICROPARTICLES OF CROSSLINKED COPOLYMER INCLUDING AMPHOIONIC GROUPS

Kazunori Kanda, Yao; Keizou Ishii, Ashiya; Katsuaki Kida, Osaka; Shinichi Ishikura, Kyoto, and Ryuzo Mizuguchi, Yahata, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Jan. 25, 1983, Ser. No. 460,878
Claims priority, application Japan, Jan. 27, 1982, 57-13053; Jan. 27, 1982, 57-13054
Int. Cl.³ C08L 75/00, 67/08
U.S. Cl. 525—123 3 Claims

1. In a high solid coating composition comprising

(A) a film-forming polymer having functional group(s) capable of reacting with the crosslinking agent (D) hereinafter referred to,

(B) a volatile organic liquid diluent in which the polymer (A) is carried,

(C) polymer microparticles having an average diameter of from 0.02 to 40 microns, which are insoluble in the combination of the film-forming polymer (A) and the diluent (B) and are maintained in a stabilized state of dispersion therein, and

(D) a crosslinking agent dissolved in the diluent (B),

the improvement wherein the microparticles (C) are composed of a crosslinked copolymer comprising α,β-ethylenically unsaturated monomers and a crosslinking monomer which is at least difunctional,

said copolymer having physically adhered or covalently bonded thereto a resinous portion having an amphoionic group of the formula:

wherein R is a member selected from substituted or unsubstituted alkylene having 1 to 6 carbon atoms and phenylene and Y is —COOH or —SO_3H, said resinous portion being selected from the group consisting of alkyd, modified epoxy, acrylic, polyester and melamine resins.

4,461,871

POLYESTER RESINOUS COMPOSITION, MOLDED ARTICLES AND PROCESS FOR PREPARATION THEREOF

Kiichi Kometani, Nagoya; Yoshiyuki Yamamoto, Suzuka, and Masana Yanagi, Nagoya, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jul. 21, 1982, Ser. No. 400,414
Claims priority, application Japan, Jul. 24, 1981, 56-115118
Int. Cl.³ C08L 67/02
U.S. Cl. 525—166 25 Claims

1. A polyester resinous composition comprising:

(a) an aromatic polyester;

(b) a copolymer containing glycidyl groups; and

(c) a copolymer consisting essentially of ethylene and an α-olefin having more than three carbon atoms, wherein the molar copolyermization ratio of ethylene to α-olefin is in a range between 40/60 to 99/1; and

wherein components (b) and (c) are each present in an amount from about 1 to 50 parts by weight per 100 parts by weight of said aromatic polyester (a).

4,461,872

BLENDS OF A PROPYLENE/α-OLEFIN COPOLYMER WITH ISOTACTIC PROLYPROPYLENE

Aaron C. L. Su, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 22, 1983, Ser. No. 468,409
Int. Cl.³ C08L 23/10, 23/18
U.S. Cl. 525—240 8 Claims

1. A composition consisting essentially of a blend of an elastomeric copolymer of 45–90 mole percent of propylene and 10–55 mole percent of a C_6–C_{12} α-olefin with isotactic polypropylene, the weight ratio of copolymer to isotactic propylene polymer being comprised within the range of about 5:95 to 95:5, wherein following relationships exist:

$$x+y=a.$$

where x = mole % of α-olefin in the copolymer, and x = 10 to 55;

y = crystallinity number of the copolymer determined by infrared spectroscopy, and y = 10 to 37; and

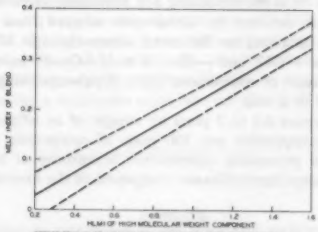
a = 20 to 65.

4,461,873

ETHYLENE POLYMER BLENDS

Fay W. Bailey, and William M. Whitte, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 22, 1982, Ser. No. 391,056
Int. Cl.³ C08L 23/04, 23/06, 23/08
U.S. Cl. 525—240 14 Claims



EFFECT OF HLMI OF HIGH MOLECULAR WEIGHT COMPONENT ON MELT INDEX OF BLEND. CONCENTRATION OF HIGH MOLECULAR WEIGHT POLYMER IS 50%. DASHED LINES ARE 95% CONFIDENCE INTERVALS.

1. Process to produce an ethylene polymer resin mixture having a density in the range of 0.940–0.965 g/cc comprising blending

(a) 40 to 70 parts by weight of a high molecular weight, low density ethylene polymer having a high load melt index (HLMI) in the range of about 0.1 to about 1.5 g/10 minutes, a density from about 0.930 to 0.945 g/cc, a heterogeneity index of <10 and having essentially no other branching than short chain branching, and

(b) 60 to 30 parts by weight of a low molecular weight, high density ethylene polymer having a melt index (MI) in the range of 45 to 300 g/10 minutes, a density above about 0.950, a heterogeneity index of <6 and being essentially linear.

4,461,874

BLOCK COPOLYMERS OF CONJUGATED DIENES OR VINYL SUBSTITUTED AROMATIC HYDROCARBONS AND ACRYLIC ESTERS AND PROCESS FOR THEIR MANUFACTURE

Philippe Teyssié, Neuville; Robert Jérome, Tilff; Trazollah Ouhadi, Liege, and Roger Fayt, Neuville, all of Belgium, assignors to Cosden Technology, Inc., Dallas, Tex.

Filed Oct. 1, 1982, Ser. No. 431,961
Claims priority, application France, Oct. 2, 1981, 81 18756
Int. Cl.³ C08F 297/02, 297/04
U.S. Cl. 525—271 12 Claims

1. Linear block copolymers comprising a first sequence formed with monomeric units derived from the group consisting of a conjugated diene and a vinyl substituted aromatic hydrocarbon other than alpha-methylstyrene; and a second sequence formed with monomeric units derived from an acrylic ester, the first and second sequences being linked by an intermediate sequence formed with monomeric units derived from alpha-methylstyrene.

4,461,875

ROOF SHEETING AND FLASHING ELASTOMERIC COMPOSITION

Allen E. Crepeau, Southbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 363,325, Mar. 29, 1982, abandoned. This application May 24, 1982, Ser. No. 381,259
Int. Cl.³ C08C 19/20
U.S. Cl. 525—348 12 Claims

1. A roofing composition, said composition selected from the group consisting of roof sheeting and roof flashing, comprising:

(a) 100 parts of an elastomer selected from the group consisting of ethylene-propylene-non-conjugated diene terpolymer, butyl rubber and mixtures thereof;

(b) 0.1 to 3.0 parts of a compound having the structural formula $[(CH_2)_nNCS)]_2S_6$ wherein n is 4 or 5; and

(c) 0.4 to 5.0 parts of a sulfur donor curative;

wherein said components (b) and (c) provide at least 0.25 part of total available sulfur; said composition not containing bitumen; and all said parts being by weight.

4,461,876

POLYMERIC REAGENTS FOR THE ISOLATION AND PROTECTION OF CARBONYL COMPOUNDS

Seymour Lieberman, Flushing; Veeramac V. K. Prasad, and Patricia A. Warne, both of New York, all of N.Y., assignors to Columbia University, New York, N.Y.

Filed Sep. 9, 1982, Ser. No. 416,103
Int. Cl.³ C08F 8/32, 8/18
U.S. Cl. 525—374 13 Claims

1. A polymeric reagent for the isolation and protection of carbonyl compounds comprising:

a polymer having a functional group of the formula $-ONH_2$ covalently attached to said polymer wherein said functional group is capable of reacting with a carbonyl group of a carbonyl compound when a solution containing said carbonyl compound contacts said reagent.

4,461,877

POLYCARBONATE/POLY(ETHYLENE TEREPHTHALATE) RESIN SOLUTIONS

Daniel W. Fox, Pittsfield; Edward N. Peters, Lenox, and Gary F. Smith, Pittsfield, all of Mass., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 259,524, May 1, 1981, abandoned. This application Dec. 6, 1982, Ser. No. 446,875
Int. Cl.³ C08L 69/00
U.S. Cl. 525—439 5 Claims

1. A thermoplastic composition comprising (1) from about 20 to about 80 percent by total resin weight of a polycarbonate resin containing units derived from diphenyl sulfone monomer and units derived from hydrocarbon bisphenol and (2) from about 80 to about 20 percent by total resin weight of poly (ethylene terephthalate) resin, said resins having been prepared by melt mixing, to provide said composition with a single glass transition point.

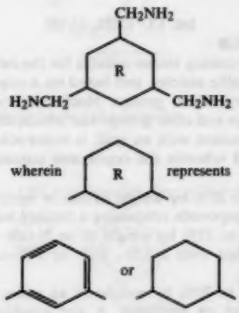
4,461,878

EPOXY RESIN HARDENING AGENTS

Ichiro Minato; Koichi Shibata, both of Hyogo, and Itsuo Furuoya, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 322,206, Nov. 17, 1981. This application Oct. 28, 1983, Ser. No. 546,522
Claims priority, application Japan, Nov. 28, 1980, 55-168372
Int. Cl.³ C08G 59/50
U.S. Cl. 525—504 4 Claims

1. A method for hardening epoxy resin which comprises mixing the epoxy resin with a hardening agent represented by the general formula:



in an amount of 0.1–2 times the number of amine equivalent of the triamine divided by epoxy equivalent and, thereafter, allowing the resulting admixture to stand until an exothermic reaction occurs and the admixture is hardened.

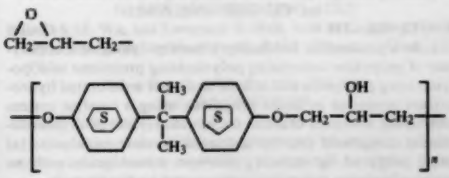
4,461,879

CURABLE SATURATED POLYEPOXIDE-TRIGLYCIDYL CYANURATE COMPOSITIONS

Ronald S. Bauer, and Larry S. Corley, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 10, 1982, Ser. No. 376,475
Int. Cl.³ C08G 59/04, 63/02
U.S. Cl. 525—526 7 Claims

1. A curable composition comprising (1) from about 60 to about 95 parts by weight of a saturated polyepoxide having the structural formula:



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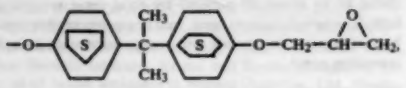


wherein n has a value so that the average molecular weight of the saturated polyepoxide is from about 350 to about 2500, (2) from about 5 to about 40 parts by weight of triglycidyl cyanurate or triglycidyl thiocyanurate and (3) a curing amount of an epoxy curing agent.

4,461,880

SURFACE-COATING BINDERS WHICH CONTAIN BLOCKED ISOCYANATE GROUPS AND ARE SUITABLE FOR CATHODIC ELECTROCOATING

Juergen Gimpel, Ludwigshafen; Volker Schwendemann, Wiesenbach; Hans-Uwe Schenck, Wachenheim, and Erich Gulbins, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 23, 1982, Ser. No. 410,838

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1981, 3133770

Int. Cl.³ C08L *63/00*

U.S. Cl. 525—528 **6 Claims**

1. A surface-coating binder suitable for the cathodic electrocoating of metallic articles, and based on a copolymer which contains tertiary amino groups, blocked isocyanate groups, hydroxyl groups and ether groups and which, due to partial or complete salification with an acid, is water-soluble or water-dispersible, and wherein the copolymer contains, as copolymerized units,

(A) from 6 to 22% by weight of one or more of olefinically unsaturated compounds containing a tertiary amino group,

(B) from 10 to 33% by weight of an N-(alk-1-enyl) isocyanate blocked with a CH-, OH- or NH-acidic blocking agent,

(C) from 20 to 70% by weight of an adduct of an epoxy resin, based on bisphenol A and epichlorohydrin and having a molecular weight of from 380 to 3,500, whereby (a) 20 to 90 mole % of the epoxide groups are etherified with an olefinically unsaturated alcohol of 3 to 20 carbon atoms and (b) 10 to 80 mole % of the expoxide groups are esterified with an olefinically unsaturated carboxylic acid of 3 to 20 carbon atoms, and

(D) from 0 to 64% by weight of one or more copolymerizable olefinically unsaturated compounds not already mentioned under (A) to (C),

with the proviso that the coploymer has a mean molecular weight of from 1,000 to 20,000 and that the sum of the percentages of (A) to (D) is 100.

4,461,881

PROCESS FOR THE PRODUCTION OF PURIFIED PROPYLENE HOMOPOLYMERS OR COPOLYMERS

Akinobu Shiga; Kiyoshi Matsuyama; Masahiro Kakugo; Yukio Naito, and Takatoshi Suzuki, all of Ehime, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 184,861, Sep. 8, 1980, abandoned. This application Oct. 23, 1981, Ser. No. 314,344

Claims priority, application Japan, Sep. 6, 1979, 54-114774

Int. Cl.³ C08F *6/08, 4/64*

U.S. Cl. 526—118 **2 Claims**

1. In a process for producing a homopolymer or a copolymer of propylene comprising polymerizing propylene or copolymerizing propylene and at least one other unsaturated hydrocarbon monomer in liquid propylene using a catalyst system containing activated titanium trichloride (a) and an organoaluminum compound (b), the activated titanium trichloride (a) being prepared by reducing titanium tetrachloride with an organoaluminum compound represented by the formula:

$$AlR_lX_{3-l}$$

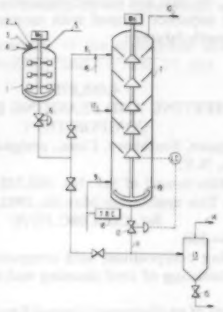
wherein R represents a straight chain, branched chain or cyclic alkyl group or an aryl group having up to 18 carbon atoms and X represents a halogen atom or a hydrogen atom and l is a number $1 \leqq l \leqq 3$, and reacting the reduced solid simultaneously or successively with an ether represented by the formula:

$$R^1—O—R^2$$

wherein R^1 and R^2 are each a straight chain, branched chain or cyclic alkyl group having 1 to 10 carbon atoms, and a halogen compound selected from the group consisting of

(i) halogen or interhalogen compounds of the formula:

$$X^1X^2_a$$



wherein X^1 and X^2 are each a chlorine, bromine or iodine atom and a is a number from 1 to 3;

(ii) titanium halides; and

(iii) organic halogen compounds,

to produce a slurry; introducing the polymer slurry produced into the top of a countercurrent washing tower; and washing the polymer slurry by countercurrently contacting the polymer slurry with liqud propylene introduced into the bottom of the washing tower,

the improvement for purifying the homopolymer or copolymer of propylene which consists essentially of feeding an epoxide selected from the group consisting of ethylene oxide and propylene oxide in a molar amount of about 3 to about 10 times the molar amount of the total of activated titanium trichloride (a) and organoaluminum compound (b), to a part of said washing tower, thereby deactivating the catalyst and removing the catalyst residue and the homopolymer or copolymer of propylene dissolved in the polymer slurry.

4,461,882

OLEFIN POLYMERIZATION

M. Bruce Welch, Bartlesville, Okla.; Richard E. Dietz, Borger, Tex.; Charles E. Capshew, and Joel L. Martin, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 30, 1982, Ser. No. 429,716

Int. Cl.³ C08F *4/64, 10/02*

U.S. Cl. 526—119 **16 Claims**

1. A process for the polymerization of olefins which comprises contacting at least one aliphatic 1-olefin under polymerization conditions with a catalyst consisting essentially of the catalytic reaction product which is formed by

(1) preparing a hydrocarbon solution of a titanium tetrahydrocarbyloxide compound and an organoaluminum halide compound;

(2) contacting the solution formed in step (1) with an or-

ganomagnesium compound alone or admixed with a minor amount of a trialkylaluminum to form a complex;

(3) reacting the product obtained in step (2) with a metal halide which is a silicon tetrahalide or a titanium tetrahalide to form a precipitate; and

(4) combining the precipitate product obtained in step (3) with an organoaluminum cocatalyst compound to form an active polymerization catalyst.

4,461,883

PROCESS FOR PRODUCING CONJUGATED DIENE POLYMER USING A SOLUBILIZED LANTHANUM CARBOXYLATE CATALYST

Yasumasa Takeuchi, Yokohama; Mitsuhiko Sakakibara, and Tooru Shibata, both of Yokkaichi, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1982, Ser. No. 387,780

Claims priority, application Japan, Jun. 29, 1981, 56-99684; Sep. 28, 1981, 56-152219; Oct. 2, 1981, 56-156214

Int. Cl.³ C08F *4/14, 4/52, 2/06*

U.S. Cl. 526—139 **27 Claims**

1. A process for producing a conjugated diene polymer, characterized by polymerizing at least one conjugated diene in a hydrocarbon solvent by using a catalyst consisting of (A) a reaction product of a Lewis base wherein the Lewis base is acetylacetone, tetrahydrofuran, pyridine, N,N'-dimethylformamide, thiophene, diphenyl ether, triethylamine, an organic phosphorus compound or a monohydric or dihydric $C_{1\text{-}10}$ alcohol, and a carboxylate of a rare earth element in the lanthanum series represented by the formula $Ln(R^1CO_2)_3$ wherein Ln is a rare earth element in the lanthanum series having an atomic number of 57 to 71 and R^1 is a hydrocarbon substituent have 1 to 20 carbon atoms, (B) an organic aluminum compound represented by the formula $AlR^2R^3R^4$ where R^2, R^3 and R^4, which may be identical or different, represent hydrogen atoms or hydrocarbon substituents having 1 to 8 carbon atoms, excluding the case where all R^2, R^3 and R^4 are hydrogen atoms at the same time, and (C) an (alkyl)aluminum halide represented by the formula $AlX_nR^3_{3-n}$ wherein X is Cl, Br, F or I; R^5 is an alkyl group having 1 to 8 carbon atoms; and n is a value of 1, 1.5, 2 or 3, or consisting of the (A), (B) and (C) constituents and (D) a conjugated diene.

4,461,884

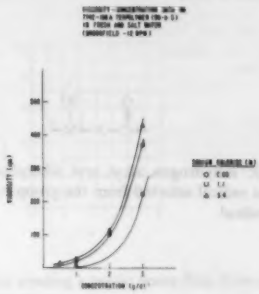
INTRAMOLECULAR POLYMERIC COMPLEXES-VISCOSIFIERS FOR ACID, BASE AND SALT (AQUEOUS) SOLUTIONS

Dennis G. Peiffer, East Brunswick; Robert D. Lundberg, Bridgewater, both of N.J., and S. Richard Turner, Rochester, N.Y., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

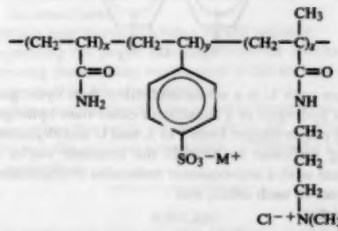
Filed Mar. 25, 1983, Ser. No. 478,657

Int. Cl.³ C08F *30/04, 130/04, 230/04*

U.S. Cl. 526—240 **10 Claims**



1. A terpolymer having the formula:



wherein x is about 40 to about 98 mole %, y is about 1 to about 50 mole %, z is about 1 to about 50 mole %, wherein y and z are less than 60 mole %, and M is selected from the group consisting of amines and a metallic cation being selected from the group consisting of lead, iron, aluminum, Groups IA, IIA, IB and IIB of the Periodic Table of Elements.

4,461,885

NYLON PREPARATION FROM UNSATURATED NITRITE WITH AMINO ACID

Mu-Yen M. Wu, and Lawrence E. Ball, both of Cuyahoga Falls, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 8, 1980, Ser. No. 214,169

Int. Cl.³ C08G *69/08*

U.S. Cl. 528—310 **13 Claims**

1. A process for producing a polymer containing a polyamide repeating unit comprising contacting an alpha, beta-unsaturated nitrile with an amino acid.

4,461,886

SUBSTITUTED BIREFRINGENT POLYAMIDE

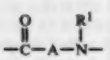
Howard G. Rogers, Weston, Mass.; Russell A. Gaudiana, Merrimack, N.H.; Jeannette S. Manello, Lawrenceville, N.J., and Ronald A. Sahatjian, Lexington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 238,069, Mar. 2, 1981, Pat. No. 4,384,107. This application Apr. 20, 1983, Ser. No. 486,800

Int. Cl.³ C08G *69/12*

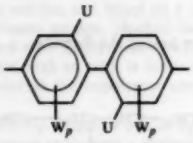
U.S. Cl. 528—331 30 Claims

1. A film- or fiber-forming polymer comprising recurring units of the formula



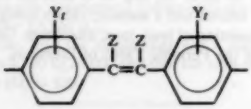
wherein R^1 is hydrogen, alkyl, aryl, alkaryl or aralkyl and A is a divalent radical selected from the group consisting of:

(1) a radical



where each U is a substituent other than hydrogen, each W is hydrogen or a substituent other than hydrogen, and each p is an integer from 1 to 3, said U and W_p substitution being sufficient to provide the aromatic nuclei of said radical with a non-coplanar molecular configuration with respect to each other; and

(2) a radical



where each of Y and Z is hydrogen or a substituent other than hydrogen and each t is an integer from 1 to 4, with the proviso that when each said Z is hydrogen, at least one said Y substituent is a substituent other than hydrogen positioned on the corresponding nucleus ortho with respect to the

moiety of said radical, said Z and Y_t substitution being sufficient to provide the aromatic nuclei of said radical with a non-coplanar molecular configuration with respect to each other.

4,461,887

BIREFRINGENT POLYMER CONTAINING RECURRING UNITS FROM DIENOIC ACID

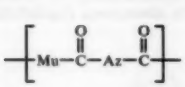
Howard G. Rogers, Weston, Mass.; Russell A. Gaudiana, Merrimack, N.H.; Jeannette S. Manello, Lawrenceville, N.J., and Ronald A. Sahatjian, Lexington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 238,057, Mar. 2, 1981, Pat. No. 4,393,196. This application May 26, 1983, Ser. No. 498,497

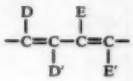
Int. Cl.³ C08G *69/26*

U.S. Cl. 528—345 17 Claims

1. A film- or fiber-forming polymer comprising recurring units of the formula:



where Mu is a divalent radical having the formula



where each of D, D′, E and E′ is hydrogen, alkyl or substituted-alkyl; and Az is a divalent radical having the formula

where each of Y and Y′ represent the atoms necessary to complete with the nitrogen atoms to which they are bonded a piperazine or substituted-piperazine radical.

4,461,888

SUBSTITUTED BIREFRINGENT POLYHYDRAZIDE

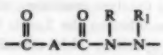
Howard G. Rogers, Weston, Mass.; Russell A. Gaudiana, Merrimack, N.H.; Jeannette S. Manello, Lawrenceville, N.J., and Ronald A. Sahatjian, Lexington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 238,069, Mar. 2, 1981, Pat. No. 4,384,107. This application Apr. 20, 1983, Ser. No. 486,801

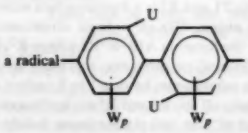
Int. Cl.³ C08G *73/08*

U.S. Cl. 528—363 15 Claims

1. A film- or fiber-forming polymer comprising recurring units of the formula

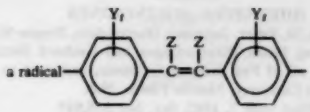


wherein R and R^1 are each hydrogen, alkyl, aryl, alkaryl or aralkyl; and A is a divalent radical selected from the group consisting of:



where each U is a substituent other than hydrogen, each W is hydrogen or a substituent other than hydrogen, and each p is an integer from 1 to 3, said U and Wp substitution being suffi-

cient to provide the aromatic nuclei of said radical with a noncoplanar molecular configuration with respect to each other, and



(2)

where each of Y and Z is hydrogen or a substituent other than hydrogen and each t is an integer from 1 to 4, with the proviso that when each said Z is hydrogen, at least one said Y substituent is a substituent other than hydrogen positioned on the corresponding nucleus ortho with respect to the

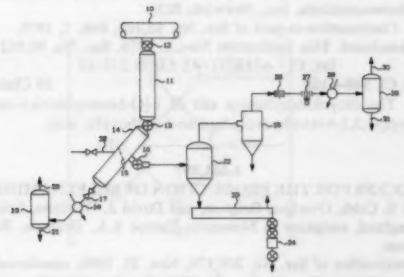
moiety of said radical, said Z and Yt substitution being sufficient to provide the aromatic nuclei of said radical with a non-coplanar molecular configuration with respect to each other.

4,461,889

SEPARATION OF SOLID POLYMERS AND LIQUID DILUENT

Donald O. Hanson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 17, 1980, Ser. No. 187,872
Int. Cl.³ C08F 6/12
U.S. Cl. 528—498 **8 Claims**



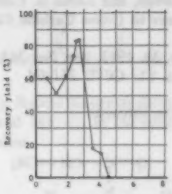
1. In a process wherein mono-1-olefin having 2 to 8 carbon atoms per molecule is polymerized in a continuous loop polymerization reactor in a liquid diluent in the presence of a suitable polymerization catalyst under such conditions that substantially all of the polymer produced is insoluble in the diluent and is in the form of solid particles of polymer wherein a slurry of said polymer solids and diluent is accumulated in a settling leg of said loop reactor, an improved method for separating the polymer solids and the diluent comprising shutting off communication between the reaction zone of said loop reactor and said settling leg when the desired level of solids have accumulated in the settling leg, passing the accumulated polymer-diluent slurry located in the settling leg to a filter vessel, filtering polymer solids from the liquid diluent in the filter vessel under pressure conditions such that the major portion of the liquid diluent from the settling leg remains in the liquid phase.

4,461,890

METHOD FOR THE TREATMENT OF WASTE FLUIDS FROM ORANGE CANNERIES AND PROCESS FOR RECOVERING PECTIC SUBSTANCE THEREFROM

Masatoshi Manabe, Kagawa; Jun Naohara, Okayama, and Hideaki Miyoshi, Kagawa, all of Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Feb. 22, 1983, Ser. No. 468,774
Claims priority, application Japan, Apr. 19, 1982, 57-65955
Int. Cl.³ C08B 37/06
U.S. Cl. 536—2 **12 Claims**



1. A method for treating a pectic waste fluid from an orange cannery, said method comprising:

(1) adjusting the pH in the acidic waste or a mixture of acidic and alkaline wastes to a level over 7.0;

allowing the acidic waste or mixture to stand for a period sufficient to effect substantial saponification of the pectic constituent;

adding acid thereto to bring its pH below 3;

separating the pectic substance from the resultant; and

treating the resulting supernatant or filtrate by a biological procedure, or, alternatively,

(2) adding acid to the alkaline waste to bring its pH below 3; separating the pectic substance from the resultant; and

treating the resultant supernatant or filtrate by a biological procedure.

4,461,891

2-β-D-RIBOFURANOSYLTHIAZOLE-4-CARBOXAMIDINE COMPOUNDS

Roland K. Robins, Provo, Utah, and Prem C. Srivastava, Oak Ridge, Tenn., assignors to Brigham Young University, Provo, Utah

Filed Mar. 2, 1983, Ser. No. 471,395
Int. Cl.³ C07H 19/24
U.S. Cl. 536—55 **2 Claims**

1. 2-β-D-ribofuranosylthiazole-4-carboxamidine and pharmaceutically acceptable salts thereof.

4,461,892

PROCESS FOR PREPARING POROUS SPHERICAL CELLULOSE PARTICLES

Masahiko Nishikawa; Hiroaki Ishibashi, and Hidenori Furukawa, all of Minamatashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Division of Ser. No. 285,582, Jul. 21, 1981, Pat. No. 4,390,691. This application Feb. 23, 1983, Ser. No. 469,109
Claims priority, application Japan, Aug. 21, 1980, 55-114982
The portion of the term of this patent subsequent to Jun. 28, 2000, has been disclaimed.
Int. Cl.³ C08B 3/06, 3/08, 3/16, 3/18
U.S. Cl. 536—65 **16 Claims**

1. Porous, spherical cellulose particles with high reproducibility, produced by dissolving a cellulose organic ester in a solvent consisting essentially of a chlorinated hydrocarbon, adding 0.001–20 wt.% (based on said cellulose organic ester) of an acid or alkali to the dissolved cellulose organic ester solu-

tion, mixing the resultant solution at a temperature from 0° to 45° C. for a period of time from 0.2 to 30 hours, suspending said cellulose organic ester solution in an aqueous medium to thereby form droplets, removing said solvent by evaporation to form cellulose organic ester particles, and saponifying said cellulose particles, the excluded critical molecular weight and the degree of porosity of the porous, spherical cellulose particles being capable of being varied as desired by varying the amount of the acid or alkali to be added.

4,461,893

1,3,5-TRIACRYLYLHEXAHYDRO-S-TRIAZINE DERIVATIVES

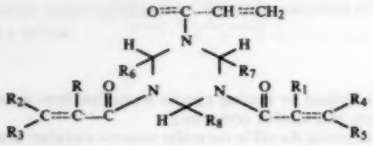
Walter T. Reichle, Warren, and Louis B. Conte, Jr., Newark, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 30, 1982, Ser. No. 363,561

Int. Cl.³ C07D *251/04*

U.S. Cl. 544—215 **12 Claims**

1. A compound of the formula:



wherein

R and R_1 are each independently hydrogen, chlorine, cyanide, or C_1 to C_3 straight chain or branched alkyl; and

R_2, R_3, R_4 and R_5 are each independently hydrogen, phenyl, or C_1 to C_5 straight chain or branched alkyl; and

R_6, R_7, and R_8 are each independently hydrogen or methyl; with the proviso that when R_2, R_3, R_4, R_5, R_6, R_7, R_8 and R are hydrogen, R_1 is not hydrogen.

4,461,894

NAPHTH[1,2-D]IMIDAZOLES

Amedeo Omodei-Salé, Voghera, and Emilio Toia, Milan, both of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

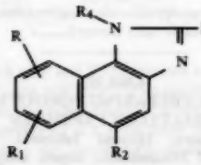
Division of Ser. No. 230,135, Jan. 30, 1981, Pat. No. 4,360,674. This application Apr. 26, 1982, Ser. No. 371,768

Claims priority, application United Kingdom, Feb. 8, 1980, 8004311

Int. Cl.³ C07D *403/08, 487/00*; A61K *31/495*

U.S. Cl. 544—370 **3 Claims**

1. A compound of the formula



wherein R and R_1, each independently, are selected from the group consisting of hydrogen, halogen, (C_1–C_6) alkyl and (C_1–C_6) alkoxy; R_2 represents hydrogen or halogen; R_3 represents a $-(CH_2)_n-NR_5R_6$ group wherein n is 2 or 3 and R_5 and R_6 taken together with the adjacent nitrogen atom represent a piperazino moiety optionally having a substituent selected from the group consisting of (C_1–C_6) alkyl, (C_2–C_6) alkenyl, (C_3–C_6) cycloalkyl, lower alkanoyl of C_2–C_6 carbons, phenyl, phenyl substituted with 1 to 3 groups independently selected from (C_1–C_6) alkyl, (C_1–C_6) alkoxy, hydroxy, benzyloxy, halogen, trifluoromethyl, amino, mono- and di-alkylamino, pyridyl, benzyl and halobenzyl; R_4 represents hydrogen or (C_1–C_6) alkyl; or a non-toxic pharmaceutically-acceptable acid addition salt thereof.

4,461,895

(DIBENZO(de,g)QUINOLINES

Edgar Fritschi, St. Peter, Johannes Hartenstein, Stegen-Wittental, Wolfgang Heidt, Emmendingen and Gerhard Satzinger, Denzlingen, all of Fed. Rep. of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

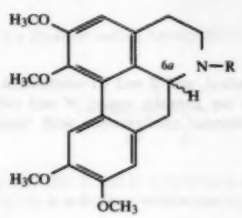
Filed May 7, 1982, Ser. No. 375,937

Claims priority, application Fed. Rep. of Germany, May 9, 1981, 3118521

Int. Cl.³ C07D *221/18*

U.S. Cl. 546—75 **3 Claims**

1. Dibenzo(de,g)quinoline derivatives of the general formula:



(I)

wherein R is an unsaturated aliphatic hydrocarbon radical containing up to 6 carbon atoms or a cycloalkylalkyl radical containing 4 to 6 carbon atoms; and the pharmacologically-acceptable salts thereof.

4,461,896

1-[ACYLTHIO) AND (MERCAPTO)-1-OXOALKYL]-1,2,3,4-TETRAHYDROQUINOLINE-2-CARBOXYLIC ACIDS

David E. Portlock, Norwich, N.Y., assignor to Norwich Eaton Pharmaceuticals, Inc., Norwich, N.Y.

Continuation-in-part of Ser. No. 10,165, Feb. 7, 1979, abandoned. This application Nov. 2, 1979, Ser. No. 90,862

Int. Cl.³ A61K *31/47*; C07D *215/48*

U.S. Cl. 546—165 **39 Claims**

1. The dicyclohexylamine salt of 1-[(3-benzoylthio)-1-oxopropyl]-1,2,3,4-tetrahydroquinoline-2-carboxylic acid.

4,461,897

PROCESS FOR THE PRODUCTION OF SULFENAMIDES

Alec S. Cobb, Overijse, Belgium, and David J. Williams, Salop, England, assignors to Monsanto Europe S.A., Brussels, Belgium

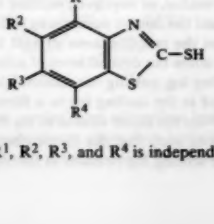
Continuation of Ser. No. 209,179, Nov. 21, 1980, abandoned. This application Sep. 24, 1982, Ser. No. 423,428

Claims priority, application United Kingdom, Nov. 23, 1979, 7940652

Int. Cl.³ C07D *277/80*

U.S. Cl. 544—135 **7 Claims**

1. In a process for the production of a sulfenamide, in which a 2-mercaptobenzothiazole of the formula



where each of R^1, R^2, R^3, and R^4 is independently hydrogen,

C_{1-6} alkyl, C_{1-6} alkoxy, chloro- or other inert substituent, and an amine which is a primary alkylamine or cycloalkylamine, or a secondary amine having the formula

where each of R^5 and R^6 is hydrogen or an alkyl or cycloalkyl group or where R^5 and R^6 are linked such that the amine has a saturated ring structure optionally containing a heteroatom in addition to the nitrogen atom shown in the formula, are reacted with oxygen in the presence of a water-insoluble catalyst selected from metal complexes of porphyrazine and its derivatives in a reaction medium consisting essentially of water and a stoichiometric excess of the amine relative to the 2-mercaptobenzothiazole, the improvement which comprises using as the reaction medium a mixture of the amine and water in which the amount of water at the outset of the reaction is from 0.5 to 5% of the weight of the mixture.

4,461,898

PROCESS FOR THE PREPARATION OF NOVEL LIGHT STABILIZERS

Anton Meier, Magden, and Eduard Troxler, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

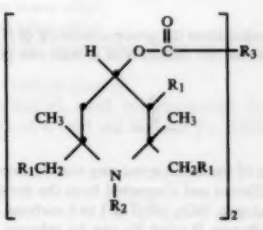
Filed Nov. 1, 1982, Ser. No. 437,929

Claims priority, application Switzerland, Nov. 10, 1981, 7207/81

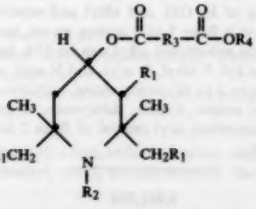
Int. Cl.³ C07D *401/12, 401/06*; C08K *5/34*

U.S. Cl. 546—188 **5 Claims**

1. A process for the preparation of a mixture of esters of polyalkylpiperidine derivatives, of the formulae I and II

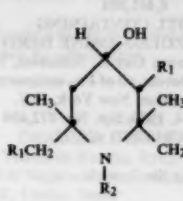


(I)



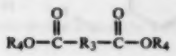
(II)

in which R_1 is hydrogen or methyl, R_2 is hydrogen, C_{1-12} alkyl, C_{3-8} alkenyl, C_{7-11} aralkyl, cyanomethyl or C_{2-4} acyl, R_3 is C_{1-18} alkylene, C_{2-18} oxaalkylene, C_{2-18} thiaalkylene, C_{2-18} azaalkylene or C_{2-8} alkenylene, R_4 is C_{1-4} alkyl and the proportions of the two esters vary between 95 to 70% by weight of I and 5 to 30% by weight of II, which comprises reacting about 2 mols of a piperidine of the formula III



(III)

with 0.9 to 1.3 mols of a diester of the formula IV



(IV)

in which R_1, R_2, R_3 and R_4 are as defined above, in the melt at between 100° and 145° C., in the presence of an alkali metal amide as a catalyst.

4,461,899

FLUORENECARBOXYLIC ACID DERIVATIVES

William J. Pyne; Han S. Ku, both of Painesville, Ohio, and Robert E. Holm, Belle Mead, N.J., assignors to Diamond Shamrock Chemicals Company, Dallas, Tex.

Filed May 24, 1982, Ser. No. 381,070

Int. Cl.³ C07D *211/94, 207/46, 207/06*

U.S. Cl. 546—203 **4 Claims**

1. The 2,6-dimethylpyrrolidine salt of 1-fluorenecarboxylic acid.

4,461,900

4,5-DIHYDROTHIADIAZOLE 1,1-DIOXIDE DERIVATIVES

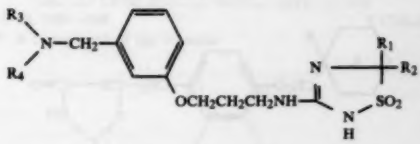
Dieter H. Klaubert, Flemington, N.J., assignor to American Home Products Corporation, New York, N.Y.

Filed Mar. 14, 1983, Ser. No. 474,908

Int. Cl.³ C07D *417/12, 417/14*

U.S. Cl. 546—209 **2 Claims**

1. A compound of the formula:



in which

R_1 and R_2 are, independently, hydrogen or alkyl of 1 to 6 carbon atoms; and

R_3 and R_4 are, independently, hydrogen or alkyl of 1 to 6 carbon atoms and when taken together, alkylene of 3 to 7 carbon atoms;

or a pharmaceutically acceptable salt thereof.

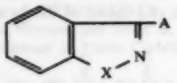
2. The compound of claim 1 which is 4,5-dihydro-N-[3-[3-[(1-piperidinyl)methyl]phenoxy]propyl]-1,2,4-thiadiazol-3-amine 1,1-dioxide or a pharmaceutically acceptable salt thereof.

4,461,901
PYRIDYL CONTAINING 1,2-BENZISOTHIAZOLE-3-AMINE DERIVATIVES

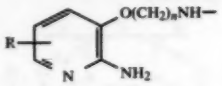
John R. Potoski, Pottstown; Guy A. Schiehser, Malvern, and Donald P. Strike, St. Davids, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Mar. 4, 1983, Ser. No. 472,404
Int. Cl.³ C07D *417/12*
U.S. Cl. 546—270 3 Claims

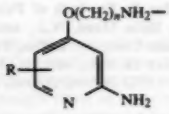
1. A compound having the formula:



wherein
X is SO_2, SO or S; and
A is an amine selected from the group:



or



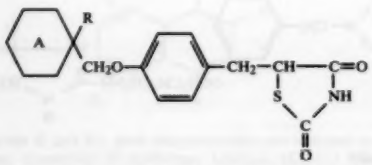
wherein R is hydrogen, (lower)alkyl, (lower)alkoxy or halo; n is 2–4; or
a pharmaceutically acceptable salt thereof.

4,461,902
THIAZOLIDINE DERIVATIVES AND PRODUCTION THEREOF

Yutaka Kawamatsu, Kyoto, and Takeshi Fujita, Takarazuka, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 29, 1982, Ser. No. 454,356
Claims priority, application Japan, Jan. 7, 1982, 57-1653
Int. Cl.³ C07D *277/34*; A61K *31/425*
U.S. Cl. 548—183 9 Claims

1. A compound of the general formula



wherein

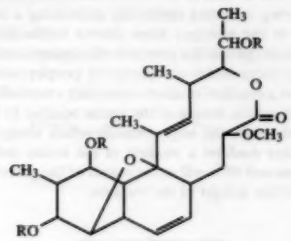
is a cyclohexane ring having an oxo or hydroxyl group as a substituent on any of the methylene groups constituting the ring and R is a hydrogen atom or a lower alkyl group having 1 to 4 carbon atoms.

4,461,903
ANTIBIOTIC NODUSMICIN DERIVATIVES

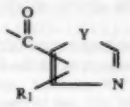
Barney J. Magerlein, and Howard A. Whaley, both of Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 175,409, Aug. 6, 1980, Pat. No. 4,360,683.
This application Jun. 15, 1981, Ser. No. 273,993
The portion of the term of this patent subsequent to Dec. 14, 1999, has been disclaimed.
Int. Cl.³ C07D *413/12*
U.S. Cl. 548—188 4 Claims

1. A compound of the formula



where R is H in no more than two positions at the same time, a blocking group selected from the group consisting of trisubstituted silyl ethers, tetrahydropyranyl ethers, β,β,β,-trichloroethyl ether, and carbonate esters in at least one position, or hydrocarbon carboxylic acid acyl of from 2 to 18 carbon atoms, inclusive; or a halo-, nitro-, hydroxy-, amino-, cyano-, thiocyano-, or loweralkoxy substituted hydrocarbon acyl radical of from 2 to 18 carbon atoms, inclusive; and loweralkoxycarbonyl or a radical of the formula



wherein Y is selected from the group consisting of N, S and O; with the proviso that the radical is in at least one position;

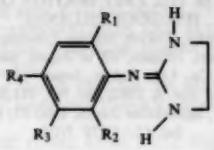
can be at any one of the unoccupied ring carbon atoms; and R_1 is the same or different and is selected from the group consisting of H, OH, halogen, NO_2, alkyl of 1 to 8 carbons, inclusive, NH_2, NR_4R_5, wherein R_4 and R_5 can be selected from the group consisting of H, OH, and alkyl and substituted alkyl, wherein the alkyl is from 1 to 8 carbon atoms, inclusive, and the substituent on substituted alkyl can be OH, halogen, SH, and the like; O alkyl, S alkyl, O acyl, and N acyl, wherein the acyl radical is from 2 to 18 carbon atoms, inclusive; or a halo-, nitro-, hydroxy-, amino-, cyano-, thiocyano-, or loweralkoxy-substituted hydrocarbon acyl radical of from 2 to 18 carbon atoms, inclusive.

4,461,904
2-(TRISUBSTITUTED PHENYLIMINO)-IMIDAZOLINES

Billie M. York, Jr., Forth Worth, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Nov. 20, 1981, Ser. No. 323,371
Int. Cl.³ C07D *233/50*
U.S. Cl. 548—315 10 Claims

1. A 2-(trisubstituted phenylimino)-imidazoline compound of the formula or a pharmaceutically acceptable salt thereof:



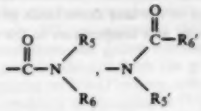
wherein

I.

$R_1=R_2$=methyl, ethyl, trifluoromethyl, chloro or bromo,

$R_1\neq R_2$=methyl, ethyl, trifluoromethyl, fluoro, chloro or bromo,

R_3 is selected from



$R_{5'}$ or R_5=H or lower alkyl,

$R_{6'}$ or R_6=H or lower alkyl,

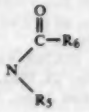
but if $R_{6'}$=methyl then R_1 and R_2 are not both chloro, the sum of the carbon atoms in R_5 and R_6 or $R_{5'}$ and $R_{6'}$ being 4 or less, and R_4=H; or

II.

$R_1=R_2$=ethyl

R_3=H,

R_4=



R_5=H or lower alkyl,

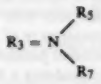
R_6=H or lower alkyl,

the sum of the carbon atoms in R_5 and R_6 being 4 or less; or

III.

$R_1=R_2$=trifluoromethyl,

$R_1\neq R_2$=methyl, ethyl, trifluoromethyl, fluoro, chloro or bromo and at least one of R_1 or R_2=trifluoromethyl,



R_5=H or lower alkyl,

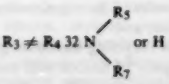
R_7=H, lower alkyl, 2-hydroxyethyl, 2-hydroxlpropyl or 3-hydroxylpropyl,

the sum of carbon atoms in R_5 and R_7 being 4 or less, and R_4=H; or

IV.

$R_1=R_2$=methyl, ethyl, trifluoromethyl, chloro or bromo,

$R_1\neq R_2$=methyl, ethyl, trifluoromethyl, fluoro, chloro, or bromo,



R_5=H or lower alkyl

R_7=2-hydroxyethyl, 2-hydroxylpropyl or 3-hydroxylpropyl,

the sum of carbon atoms in R_5 and R_7 being 4 or less, but if R_3=H then $R_1=R_2$=ethyl.

4,461,905

IMIDAZOLE DERIVATIVES

Kinji Iizuka; Tetsuhide Kamijo; Ryoji Yamamoto, and Hiromu Harada, all of Nagano, Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

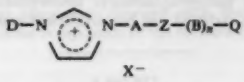
Filed Aug. 30, 1982, Ser. No. 413,204

Claims priority, application Japan, Aug. 29, 1981, 56-135892

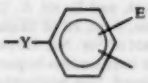
Int. Cl.³ C07D *233/60*

U.S. Cl. 548—341 **19 Claims**

1. An imidazole derivative of the following formula:



wherein A and B may be the same or different, and each is a straight- or branched-chain alkylene or alkenylene group having 1 to 8 carbon atoms, D is an alkanoyl group having 2 to 10 carbon atoms, an alkoxycarbonyl group having 2 to 7 carbon atoms or a dialkoxymethyl group having 3 to 13 carbon atoms, Q is a cyano group or an alkoxycarbonyl group having 2 to 7 carbon atoms, X is a halogen atom, Z is



(wherein E is a hydrogen atom, a halogen atom, an alkyl group having 1 to 6 carbon atoms or an alkoxy group having 1 to 6 carbon atoms, Y is an oxygen atom or a sulfur atom and may be connected with either A or B), n is zero or 1, with the proviso that n is 1 when Y connects with B.

4,461,906

PYRROLIDINE 2-ONE DERIVATIVES

Werner Aschwanden, Ettingen, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

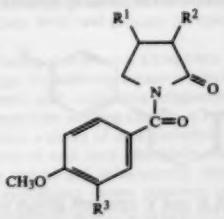
Filed Jul. 28, 1980, Ser. No. 172,607

Claims priority, application Switzerland, Aug. 9, 1979, 7308/79; Jun. 20, 1980, 4755/80

Int. Cl.³ C07D *207/273, 407/12*; A61K *31/404*

U.S. Cl. 548—406 **8 Claims**

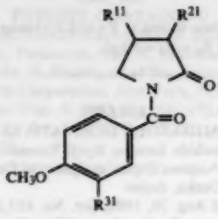
1. A compound of the formula



I

wherein one of R^1, R^2 and R^3 represents hydroxy and the remaining substituents represent hydrogen.

7. A compound of the formula



wherein OR^{21} is selected from the group consisting of p-methoxytrityl, p,p'-dimethoxytrityl, p,p',p''-trimethoxytrityl, trialkylsilyl, hexahydropyran-2-yl, 4-methoxyhexahydropyran-4-yl, acetyl, chloroacetyl, trifluoroacetyl, methoxyacetyl, phenoxyacetyl, benzyloxycarbonyl, trichloroethoxycarbonyl, tribromoethoxycarbonyl and benzoylformyl and R^{11} and R^{31} are hydrogen.

4,461,907

AMINO-SUBSTITUTED FLAVANS USEFUL AS ANTI-VIRAL AGENTS

John F. Batchelor, 10, Wilton Pl., Overbury Ave., Beckenham, Kent; Denis J. Bauer, 80 Clifton Hill, St. John's Wood, London NW8; Harold F. Hodson, 69 Whitecroft Way, Park Langley, Beckenham, Kent; John W. T. Selway, Westcroft, Hartley La., Cranbrook, Kent, and David A. B. Young, 47, Sylvan Way, West Wickham, Kent, all of England

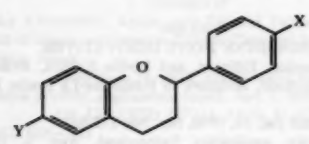
Continuation-in-part of Ser. No. 127,465, Mar. 5, 1980, abandoned, which is a continuation-in-part of Ser. No. 20,256, Mar. 14, 1979, abandoned. This application Jul. 14, 1982, Ser. No. 398,211

Claims priority, application United Kingdom, Mar. 15, 1978, 10251/78

Int. Cl.³ C07D *311/60*

U.S. Cl. 549—406 **6 Claims**

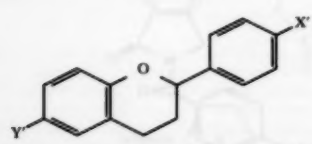
1. A mono- or di-substituted flavan of formula (IID)



(IID)

wherein either both X and Y represent groups independently selected from amino and lower alkylamino, or one of X and Y represents a group selected from amino and lower alkylamino and the other of X and Y represents a hydrogen atom.

2. A mono- or di-substituted flavan of formula (IID')



(IID')

wherein either both X' and Y' represent groups independently selected from amino and N,N-dimethylamino or one of X' and Y' represents a group selected from amino and N,N-dimethylamino and the other of X' and Y' represents a hydrogen atom.

4,461,908

METHOD FOR THE PREPARATION OF METHYL HYDROGENSILANES

Minoru Takamizawa, Tokyo; Mitsuo Umemura, Gunma, and Taishi Kobayashi, Niigata, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1983, Ser. No. 481,867

Claims priority, application Japan, Dec. 17, 1982, 57-222541

Int. Cl.³ C07F *7/08*

U.S. Cl. 556—430 **3 Claims**

1. A method for the preparation of a methyl hydrogensilane represented by the general formula $H_mSi_n(CH_3)_{2n+2-m}$, in which n is a positive integer of 1, 2 or 3 and m is a positive integer with the proviso that $(2n+2-m)$ is a positive integer, which comprises pyrolyzing a methyl polysilane having more than three silicon atoms per molecule and composed of methylsilicon units $CH_3Si\equiv$, dimethylsilicon units $(CH_3)_2Si=$ and trimethylsilicon units $(CH_3)_3Si-$, of which at least 60% of the total molar content of the said three kinds of the units are the dimethylsilicon units, at a temperature in the range from 350° to 800° C.

4,461,909

PROCESS FOR CONTINUOUSLY PREPARING A DIESTER OF OXALIC ACID

Susumu Tahara; Kozo Fujii; Keigo Nishihira; Masaoki Matsuda, and Katsuhiko Mizutare, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Continuation of Ser. No. 293,703, Aug. 17, 1981, abandoned. This application May 19, 1983, Ser. No. 495,459

Claims priority, application Japan, Aug. 26, 1980, 55-116456; Aug. 26, 1980, 55-116458

Int. Cl.³ C07C *69/34*

U.S. Cl. 560—193 **18 Claims**

1. A process for continuously preparing a diester of oxalic acid, which comprises

(1) a first step of passing gas containing carbon monoxide and an ester of a saturated monohydric aliphatic or alicyclic alcohol having 1 to 8 carbon atoms with nitrous acid into a reactor packed with a solid catalyst comprising a platinum group metal or its salt, and catalytically reacting said carbon monoxide and ester of nitrous acid in the gaseous phase at a temperature of from 50° to 200° C. and a pressure of from ambient pressure to 10 kg/cm^2 (guage) to obtain a product containing a diester of oxalic acid;

(2) a second step of passing the product of the first step to a condenser to separate said product into a non-condensed gas containing nitrogen monoxide formed by the catalytic reaction of the first step from a condensed liquid containing the diester of oxalic acid;

(3) a third step of passing the non-condensed gas of the second step to a regeneration column and therein contacting it with a gas containing molecular oxygen and an alcohol to react with nitrogen monoxide in the non-condensed gas to regenerate said ester of nitrous acid as a gas and to provide a concentration of nitrogen monoxide in said gas at the outlet of the regeneration column of from 2 to 7% by volume; and

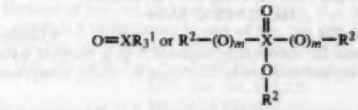
(4) a fourth step of recycling the outlet gas of the third step containing the ester of nitrous acid and from 2 to 7% by volume of nitrogen monoxide to the reactor of the first step.

4,461,910
PROCESS FOR THE CO-PRODUCTION OF DICARBOXYLATES AND ACIDS

Elt Drent, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 8, 1982, Ser. No. 355,957
Claims priority, application United Kingdom, May 15, 1981, 8114907
Int. Cl.³ C07C *51/083, 67/00, 67/12, 69/003, 69/007*
U.S. Cl. 560—263 9 Claims

1. A process for the co-production of an alkylidene dicarboxylate and a carboxylic acid, which comprises hydrogenating a carboxylic acid anhydride of the general formula R—CO—O—CO—R, in which each R independently represents an organo group having up to 20 carbon atoms selected from an alkyl, alkenyl, alkynyl, and aryl, at a temperature from 100° to 200° C. and pressure from 10 to 150 bars in the presence of carbon monoxide and a homogeneous iridium- and/or rhodium-containing catalyst, together with an organo phosphorus (III), arsenic (III) or antimony (III) compound and component selected from the group consisting of molecular oxygen and compounds selected from the group consisting of compounds containing an X=O moiety, wherein X is selected from the group consisting of phosphorus (V), arsenic (V), and antimony (V), said X=O moiety compounds having the general formula



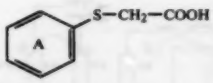
in which X represents a phosphorus, arsenic or antimony atom, each m independently is 0 or 1, each R^1 independently represents an organo group having up to 20 carbon atoms selected from the group consisting of alkyl, cycloalkyl and aryl, or one R^1 has this meaning and the other two R^1's, together represent one alkylene group, said organo group may optionally bear at least one substituent selected from the group consisting of halogen atoms, alkoxy groups and phenyl groups, and each R^2 independently represents R^1 or a hydrogen atom.

4,461,911
PROCESS FOR THE PREPARATION OF S-ARYLTHIOGLYCOLIC ACIDS

Detlef-Ingo Schütze, Bergisch-Gladbach, and Anton Adams, Siegburg, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 26, 1982, Ser. No. 382,549
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1981, 3123157
Int. Cl.³ C07C *149/40*
U.S. Cl. 562—427 18 Claims

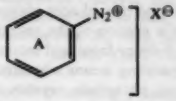
1. Process for the preparation of S-arylthioglycolic acids of the formula



(I)

in which

A designates a benzene ring, which can be substituted by 1, 2, 3, 4 or 5 substituents selected from the group consisting of halogen, nitro, hydroxyl, mercapto, trifluoromethyl, alkyl, aryl, alkoxy, aryloxy, acylamino, alkylamino, arylamino, alkylmercapto, arylmercapto, cyano, carboxyl, alkylcarbonyl, arylcarbonyl, alkoxycarbonyl, aryloxycarbonyl, unsubstituted aminocarbonyl and aminocarbonyl which is mono- or di-substituted on the N-atom by C_1–C_6-alkyl or phenyl, or A represents an unsubstituted benzene ring or a substituted benzene ring, which carries 1 or 2 of the previously mentioned substituents, to which a carbocyclic or heterocyclic aromatic ring is fused to A, wherein aryldiazonium salts of the formula



(II)

in which

A has the meanings given for the formula (I) and

X designates the radical of an acid capable of forming a salt with the diazonium cation,

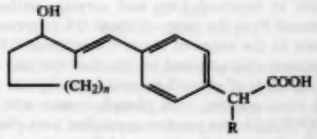
are reacted with thioglycolic acid in an aqueous acid medium in the present of Cu(I) or Cu(II) salts, and the reaction is allowed to proceed such that the reaction mixture forms compounds of the formula (I).

4,461,912
PHENYLACETIC ACID DERIVATIVES, THEIR PREPARATION AND COMPOSITIONS CONTAINING THEM

Atsusuke Terada; Shunji Naruto, and Eiichi Misaka, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Dec. 6, 1982, Ser. No. 447,474
Claims priority, application Japan, Dec. 18, 1981, 56/204616
Int. Cl.³ C07C *62/30, 59/00*
U.S. Cl. 562—468 15 Claims

1. Compounds of formula (I):



(I)

(wherein R represents a hydrogen atom or a C_1–C_3 alkyl group and n represents an integer from 1 to 3) and pharmaceutically acceptable salts and esters thereof.

4,461,913
PRODUCTION OF UREA PHOSPHATE

Harry T. Lewis, and Ewell F. Dillard, both of Florence, Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 324,515, Nov. 24, 1981, now Defensive Publication No. T. 103,206. This application May 10, 1982, Ser. No. 376,809
Int. Cl.³ C07C *126/08, 127/01;* C07F *15/04*
U.S. Cl. 564—063 8 Claims

1. In an improved process for the production of crystalline urea phosphate from wet-process phosphoric acid and urea comprising:

(1) introducing wet-process phosphoric acid and urea into first-stage crystallizing means wherein said wet-process phosphoric acid, containing substantially all of the congeneric impurities relating thereto, is reacted with said urea to produce a slurry of urea phosphate wherefrom at least a portion of said urea phosphate slurry is removed to cooling means and subsequently returned to said first-stage crystallizing means whereby said urea phosphate slurry therein is cooled to at least the saturation temperature of said slurry;

(2) removing at least a portion of said resulting cooled urea phosphate slurry from said first-stage crystallizing means and introducing same into second-stage crystallizing

means wherefrom at least a portion thereof is removed to cooling means and subsequently returned to said second-stage crystallizing means to effect the cooling of said urea phosphate slurry therein to a temperature ranging from about 30° F. to about 50° F. below the saturation temperature thereof to effect further and significantly more pronounced crystallization of said urea phosphate therein;

(3) removing at least a portion of the resulting crystallized urea phosphate and slurry from said second-stage crystallizing means to separating means wherefrom a substantial portion of the urea phosphate crystals therein are removed as product and wherefrom the mother liquor comprising urea phosphate solution, urea phosphate crystals, and other precipitated solids is removed to mother liquor surging, settling, and separating means; and

(4) removing at least a portion of the treated mother liquor from said mother liquor surging, settling, and separating means, and introducing same as recycle to said first-stage crystallizing means;

the improvement in combination therewith for substantially (a) increasing the solubility of at least one of the co-precipitating contaminating materials in said mother liquor, said co-precipitating contaminating material comprising the water insoluble iron phosphate-urea salt $[FeH_3(PO_4)_2.2CO(NH_2)_2]$; (b) significantly improving the purity of the crystalline urea phosphate product; and (c) substantially improving the useful storage life characteristics of said recycle mother liquor, which improved process comprises the additional step of adding to at least a portion of the recycled mother liquor removed from said mother liquor surging, settling, and separating means and introduced to said first-stage crystallizing means an acidulating agent selected from the group of mineral acids comprising sulfuric, hydrochloric, phosphoric, and mixtures thereof, in predetermined quantities sufficient to reduce the pH of said mother liquor so removed from said surging, settling, and separating means from the range of about 0.6 to greater than about 1 down to the range of about 0.4 to about 0.01, said improved process characterized by the fact that the normal presence of upwards of about 2 percent by weight of the co-precipitated contaminating iron phosphate-urea salt $[FeH_3.(PO_4)_2.2CO(NH_2)_2]$ in the product crystalline urea phosphate is substantially eliminated therefrom and the average reduction of impurities in the product crystalline urea phosphate is increased from about 8 to about 17 percent.

4,461,914

METHOD FOR THE PREPARATION OF 1-(4'-AMINO-3',5'-DICHLOROPHENYL)-2-ALKYL(OR DIALKYL)AMINOETHANOLS

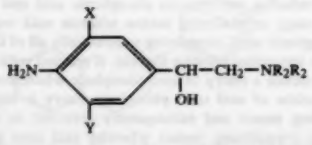
Terence J. Bentley, East Windsor, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 1, 1983, Ser. No. 462,856

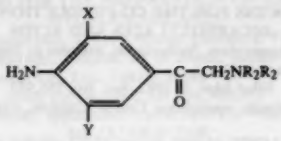
Int. Cl.³ C07C *85/24*

U.S. Cl. 564—357 **5 Claims**

1. A method for the preparation of a compound of structural formula,



wherein R_1 and R_2 are hydrogen or C_1–C_4 alkyl; X and Y are hydrogen, bromine, chlorine or fluorine; or pharmaceutically-acceptable acid addition salts thereof, said method comprising: reducing a compound of structural formula,



wherein R_1, R_2, X and Y are as hereinabove defined, by reacting same with hydrogen in the presence of platinum oxide catalyst and a promoter selected from the group consisting of stannous chloride, ferrous chloride, ferric chloride, cobaltous chloride or cerous chloride; and a solvent selected from the group consisting of methyl alcohol, ethyl alcohol, propyl alcohol, isopropyl alcohol, or mixtures thereof; at a temperature range of about 10° C. to 30° C.; and at a pressure of about 1.69 kg cm^{-2} to 4.92 kg cm^{-2}; for a period of time sufficient to essentially complete the reaction.

4,461,915

PURIFICATION OF BISPHENOL-A

Ashok K. Mendiratta, Schenectady, and Wayne F. Morgan, Mechanicville, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 15, 1982, Ser. No. 443,344

Int. Cl.³ C07C *37/84*

U.S. Cl. 568—724 **6 Claims**

1. A process for recovering bispenol-A in a purified state from water crystallized crude bisphenol-A which comprises the steps of:

(a) mixing water-crystallized bisphenol-A in the presence of water with an organic solvent, said organic solvent being immiscible in water, lighter than water and a good solvent medium for impurities within crude bisphenol-A,

(b) agitating the mixture,

(c) forming three phases in the agitated mixture of step (b),

(d) removing the top phase of the three phase mixture of step (c), and

(e) separating purified bisphenol-A crystals from the remaining two phases of step (d).

4,461,916

PROCESS FOR THE PRODUCTION OF P-TERT-OCTYL PHENOL BY CATALYTIC ALKYLATION OF PHENOL

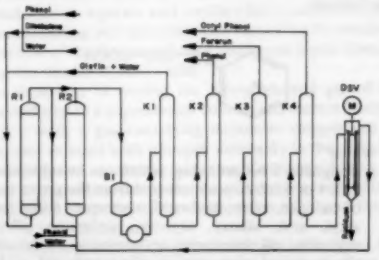
Helmut Alfs; Werner Boexkes, and Erwin Vangermain, all of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huels A.G., Marl, Fed. Rep. of Germany

Filed Dec. 29, 1982, Ser. No. 454,217

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1981, 3151693

Int. Cl.³ C07C *37/14*

U.S. Cl. 568—788 **10 Claims**



1. A process for producing p-tert-octyl phenol comprising, in a first stage, in a solid-bed reactor, reacting phenol with

diisobutene in a molar ratio of phenol to diisobutene of 1:1 to 8:1, in the presence of a catalytic amount of an acidic ion exchanger and 1–5 wt. % of water based on the total weight of the starting mixture, at a temperature of 110°–140° C. and under a superatmospheric pressure of up to 5 bar, thereby producing p-tert-octyl phenol and a dioctyl phenol by-product; and in a second stage, reacting the by-product dioctyl phenol in a solid-bed reactor with phenol in a molar ratio of phenol to dioctyl phenol of 1:1 to 8:1, in the presence of a catalytic amount of an acidic ion exchanger and 1–5 wt. % of water based on the total weight of the starting mixture, at a temperature of 110°–140° C. and under a superatomospheric pressure of up to 5 bar to obtain additional p-tert-octyl phenol.

4,461,917

9-DEOXY-9-METHYLENE-PGE COMPOUNDS

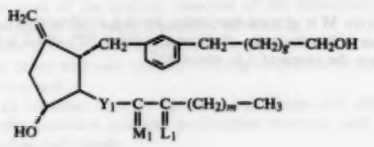
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 682,848, May 4, 1976, Pat. No. 4,060,534, which is a continuation-in-part of Ser. No. 651,622, Jan. 23, 1976, Pat. No. 4,021,467, which is a division of Ser. No. 556,768, Mar. 10, 1975, Pat. No. 3,950,363. This application Sep. 12, 1977, Ser. No. 832,329

Int. Cl.³ C07C *177/00*

U.S. Cl. 568—807 **1 Claim**

1. A prostaglandin analog of the formula

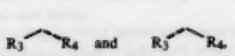


wherein Y_1 is trans—CH=CH—, —C≡C—, or —CH_2CH_2—;
wherein M_1 is

or

wherein R_5 is hydrogen or methyl;
wherein L_1 is

or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein g is one, 2 or 3; and
wherein m is one to 5, inclusive.

4,461,918

PROCESS FOR PRODUCING PENTACHLORONITROBENZENE FROM HEXACHLOROBENZENE

Walter A. Gay, Cheshire, and Robert F. Dietrick, Clinton, both of Conn., assignors to Uniroyal, Inc., Middlebury, Conn.

Continuation-in-part of Ser. No. 444,757, Nov. 26, 1982. This application Jan. 28, 1983, Ser. No. 461,885

Int. Cl.³ C07C *79/12*

U.S. Cl. 568—938 **14 Claims**

1. A process for producing pentachloronitrobenzene comprising:

(a) reacting hexachlorobenzene with sodium hydrosulfide in the presence of an inorganic base selected from the group consisting of sodium hydroxide, sodium carbonate, and mixtures thereof, to form sodium pentachlorothiophenolate; and

(b) reacting said sodium pentachlorothiophenolate with a mixed nitration acid comprising nitric and sulfuric acid at a temperature from about 35° C. to 110° C. to form pentachloronitrobenzene, said nitric acid being in molar excess of said pentachlorothiophenol.

4,461,919

PROCESS FOR THE OXYCHLORINATION OF AN ALKANE USING A SOLID SOLUTION CATALYST CONTAINING IRON CATIONS

William J. Kroenke, Brecksville, and Paul P. Nicholas, Broadview Heights, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 950,119, Oct. 10, 1978, Pat. No. 4,375,569, which is a division of Ser. No. 741,910, Nov. 15, 1976, Pat. No. 4,119,570, which is a continuation-in-part of Ser. No. 564,794, Apr. 3, 1975, abandoned. This application Jan. 14, 1983, Ser. No. 457,850

Int. Cl.³ C07C *17/154*

U.S. Cl. 570—224 **1 Claim**

1. A process for oxychlorination of ethane comprising contacting ethane, oxygen, and hydrogen chloride in the presence of a solid solution catalyst of iron cations in a host lattice of $BaAl_{12}O_{19}$ at a temperature from about 400° C. to about 650° C. wherein the ethane, oxygen, and hydrogen chloride are employed at a mole ratio of 1 mole of ethane to 0.1 to 10 moles of hydrogen chloride to 0.1 to 1.5 moles of oxygen, said solid solution catalyst having an iron content of from about 0.5 percent to 70 percent by weight, expressed as the oxide, and an X-ray diffraction pattern having peak positions different than that of its host lattice.

4,461,920

ISOMERIZATION OF DICHLOROBUTENES

Higashi Ito, and Seiichi Watanabe, both of Ohmi, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 63,257, Aug. 2, 1979, Pat. No. 4,237,074, which is a continuation-in-part of Ser. No. 941,685, Sep. 12, 1978, abandoned. This application Feb. 12, 1980, Ser. No. 120,826

Claims priority, application Japan, Sep. 30, 1977, 52-116879; Sep. 30, 1977, 52-116880

Int. Cl.³ C07C *17/24*

U.S. Cl. 570—236 **13 Claims**

1. In an isomerization reaction between 3,4-dichlorobutene-1 and 1,4-dichlorobutene-2 in the presence of a catalyst at 80° to 130° C., the improvement comprising:

conducting the isomerization reaction in the presence of a catalyst which is a combination of a copper compound or copper metal and at least one additive selected from the group consisting of 1,3-diphenylguanidine, di-o-tolylguanidine, glycine ethyl ester hydrochloride and 2-amino-4-chlorophenol with the proviso that when said copper compound is cuprous chloride, said additive cannot be

1,3-diphenylguanidine, di-o-tolylguanidine or mixtures thereof.

4,461,921

CATALYTIC COMPOSITIONS AND PROCESS USES

Marvin R. Klotz, Batavia, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 281,840, Jul. 9, 1981, Pat. No. 4,431,748, which is a continuation-in-part of Ser. No. 69,236, Aug. 23, 1979, Pat. No. 4,299,808, which is a continuation-in-part of Ser. No. 927,843, Jul. 25, 1978, abandoned, and a continuation of Ser. No. 733,269, Oct. 18, 1976, abandoned. This application Jul. 18, 1983, Ser. No. 514,580

Int. Cl.[3] **C07C** *5/24, 5/30*

U.S. Cl. 583—481 **9 Claims**

1. A process for the conversion of a hydrocarbon stream, which process comprises contacting said stream under hydrocarbon conversion conditions with a catalytic composition comprising a molecular sieve-containing component and a porous refractory inorganic oxide, said molecular sieve-containing component and said inorganic oxide having been intimately admixed with one another, said molecular sieve-containing component comprising a mixture of a crystalline chromosilicate and an oxide of chromium, providing an X-ray diffraction pattern comprising the following X-ray diffraction lines and assigned strengths:

Interplanar Spacing d, Å	Assigned Strength
11.14 ± 0.2	M
9.89 ± 0.2	VS
3.85 ± 0.07	MS
3.81 ± 0.07	M
3.72 ± 0.05	M
3.63 ± 0.05	M
2.67 ± 0.02	M
2.48 ± 0.02	M

and having the following composition in terms of mole ratios of oxides:

$$0.9\pm0.2M_{2/n}O:Cr_2O_3:YSiO_2:ZH_2O,$$

wherein M is at least one cation having a valence of n, Y is a value within the range of about 4 to about 500, and Z is a value within the range of 0 to about 160.

2. A process for the isomerization of a xylene feed, which process comprises contacting said feed under isomerization conditions with a catalytic composition which comprises a molecular sieve-containing component and a porous refractory inorganic oxide, said molecular sieve-containing component and said refractory inorganic oxide having been intimately admixed with one another, said molecular sieve-containing component comprising a mixture of a crystalline chromosilicate and an oxide of chromium, providing an X-ray diffraction pattern comprising the following X-ray diffraction lines and assigned strengths:

Interplanar Spacing d, Å	Assigned Strength
11.14 ± 0.2	M
9.89 ± 0.2	VS
3.85 ± 0.07	MS
3.81 ± 0.07	M
3.72 ± 0.05	M
3.63 ± 0.05	M
2.67 ± 0.02	M
2.48 ± 0.02	M

and having the following composition in terms of mole ratios of oxides:

$$0.9\pm0.2M_{2/n}O:Cr_2O_3:YSiO_2:ZH_2O,$$

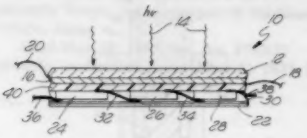
wherein M is at least one cation having a valence of n, Y is a value within the range of about 4 to about 500, and Z is a value within the range of 0 to about 160.

4,461,922

SOLAR CELL MODULE

Charles F. Gay; V. K. Kapur, both of Northridge, and James H. Wilson, Altadena, all of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 14, 1983, Ser. No. 466,233
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—249 **24 Claims**



1. A photovoltaic module comprising:

(A) a first independently operable panel of solar cells having a first bandgap and including a first optically transparent substrate having a plurality of thin film solar cells formed thereon, at least some of said thin film solar cells being electrically series interconnected;

(B) a first transparent conductive layer between said first substrate and said thin film solar cells and a second transparent conductive layer on the other side of said thin film solar cells;

(C) a second independently operable panel of solar cells having a second bandgap, said first and second band gaps being different, said second panel including a second substrate carrying a plurality of solar cells, at least some of said solar cells on said second substrate being electrically series interconnected;

(D) said second transparent conductive layer having a thickness such that the light passed through it is optimally at the peak of the spectral response of the semiconductor material in said second panel of solar cells;

(E) said first and second panels being stacked one on top of the other with said solar cells facing each other in optical series; and

(F) an interface layer of optically transparent and electrically insulative material sandwiched between said first and second panels.

4,461,923

ROUND SHIELDED CABLE AND MODULAR CONNECTOR THEREFOR

Stephen B. Bogese, II, Salem, Va., assignor to Virginia Patent Development Corporation, Roanoke, Va.

Filed Mar. 23, 1981, Ser. No. 246,165
Int. Cl.³ H01B *11/06*; H01R *11/20*
U.S. Cl. 174—36 **27 Claims**

18. In combination: A multi-conductor round cable comprising:

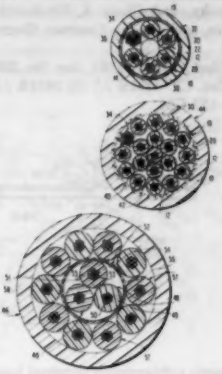
at least one layer containing a plurality of insulated conductors circularly arranged about the longitudinal axis of the cable, said plurality of insulated conductors each having approximately equal outside diameters;

means for shielding said at least one layer from external electromagnetic interference comprising a flexible electrically conductive shield surrounding and in contact with said at least one layer;

means for providing ground potential to said shield comprising a single uninsulated conductor contained in said at least one layer, said uninsulated conductor having an outside diameter approximately equal to the outside diameter of one of said insulated conductors and being disposed in electrical and physical contact with said shield, and

an outer jacket surrounding said shield; and

a connector comprising a housing having a cable receiving opening formed therein, and means for maintaining said



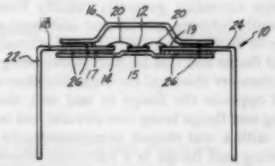
cable in pressurized engagement with said connector within said cable receiving opening.

4,461,924

SEMICONDUCTOR CASING

Sheldon H. Butt, Godfrey, Ill., assignor to Olin Corporation, New Haven, Conn.

Filed Jan. 21, 1982, Ser. No. 341,392
Int. Cl.³ H05K *5/00*
U.S. Cl. 174—52 FP **14 Claims**



1. In a casing adapted to house an electrical component, comprising:

a metal base member;

a metal housing member being mounted upon said base member to provide a hollow enclosed casing for receiving said electrical component;

a metal lead frame within said enclosed casing for electrical connection to said electrical component, said lead frame having terminal leads projecting between said base member and said housing member external to said casing, the improvement comprising:

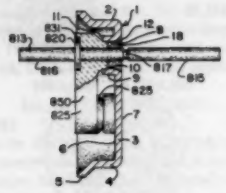
said metal base member, metal lead frame and metal housing member each having a thin refractory oxide layer on their surfaces; and

an epoxy between the thin refractory oxide layers for sealing and bonding said lead frame between said base member and said housing member whereby said enclosed casing is formed.

4,461,925
HERMETIC REFRIGERATION TERMINAL

Benjamin Bowsky, and Glenn A. Honkamp, both of Warren County, Ohio, assignors to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 31, 1981, Ser. No. 298,010
Int. Cl.³ H01B *17/30;* **H01R** *13/74*
U.S. Cl. 174—152 GM **9 Claims**



6. In a hermetic refrigeration terminal having a cup-shaped body with a generally flat bottom and a plurality of openings in said bottom each defined by an annular sealing lip, there being at each opening a current conducting pin extending through said opening and beyond said lip on both ends thereof, the inner end of said pin being on the dish side and the outer end of said pin being on the outer side of said body, seal bonding said pin to an inside surface of said lip, a flange extending generally radially from said pin and located axially between said lip and said inner end of said pin, and a sleeve surrounding said pin and extending axially between said flange and said lip, said sleeve being at least in part larger in diameter than said opening, said sleeve being bonded at its end opposite the flange to said seal, the improvement comprising all of said sleeves being joined by a common web.

9. In a hermetic refrigeration terminal having a cup-shaped body with a generally flat bottom and at least one opening in said bottom defined by an annular sealing lip, a current conducting pin extending through said opening and beyond said lip on both ends thereof, the inner end of said pin being on the dish side and the outer end of said pin being on the outer side of said body, a seal bonding said pin to an inside surface of said lip, a flange extending generally radially from said pin and located axially between said lip and said inner end of said pin, and a sleeve surrounding said pin and extending axially between said flange and said lip, said sleeve being at least in part larger in diameter than said opening, said sleeve being bonded at its end opposite the flange to said seal, the improvement comprising said flange being non-circular and said sleeve being provided with a seat shaped complementarily to said flange and receiving said flange in a particular orientation, said pin being made of a core of electrically conductive metal of high coefficient of expansion compared with said seal and a tube of material with coefficient of expansion less different from said seal than that of said core, said tube embracing said core and extending through the reach of said seal, and being secured hermetically tightly to said core, said tube having a flange, seated in said seat and constituting the pin flange.

4,461,926
HERMETICALLY SEALED INSULATING ASSEMBLY

James C. Kyle, 2547 Fisher Rd., Roseburg, Oreg. 97470

Continuation of Ser. No. 111,787, Jan. 9, 1980, abandoned. This application Nov. 16, 1981, Ser. No. 322,014
Int. Cl.³ H01B *17/26;* **C03C** *27/02, 3/22*
U.S. Cl. 174—152 GM **14 Claims**

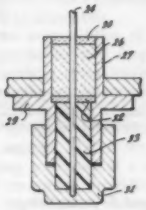
1. In combination,

a first member,

a second member disposed in spaced relationship to the first member,

a first insulating material disposed between the first and second members in hermetically sealed relationship to these members and having a partially crystalline and partially amorphous composition, and

a second insulating material disposed between the first and second members in fused relationship to the first insulating material and having a more crystalline composition than



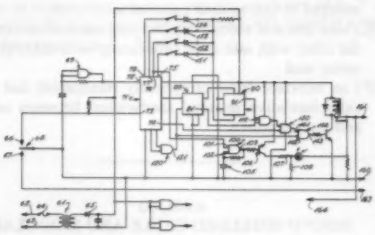
the first insulating material and providing a mechanical and chemical barrier, the chemicals constituting the first insulating material being the same as the chemicals constituting the second insulating material,

the first and second insulating materials being non-hygroscopic.

4,461,927
AUTOMATIC DIALING AND ALARM SYSTEM

Ronald E. Olson, 3416 Oakhurst Dr.; William H. Windel, 3412 Oakhurst Dr., both of Burtonsville, Md. 20866, and John M. Harrison, P.O. Box 1214, Concord, N.H. 03301

Filed Mar. 3, 1983, Ser. No. 471,645
Int. Cl.³ H04M *11/04*
U.S. Cl. 179—2 A **16 Claims**



1. An electrical circuit comprising:

(a) first connection means for connecting said circuit to an electrical power source;

(b) second connection means for connecting said circuit to means sensing a condition;

(c) clock means for generating periodic signals in the form of clock pulses;

(d) counter means connected to said clock means for counting said clock pulses;

(e) reset means (i) associated with said counter means to substantially continuously reset said counter means whenever said condition is not sensed and (ii) associated with said means sensing a condition to disable said reset means whenever said condition is being sensed;

(f) dialing means responsive to said counter means to generate signals to dial a predetermined number;

(g) control means controlled by said counter means to control a time period during which said dialing means is operative;

(h) tone generating means which generates a tone signal after said control means has ended said time period; and

(i) third connection means for connecting the signals gener-

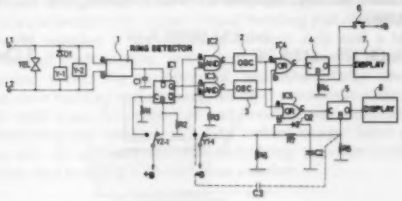
ated by said dialing means and said tone generating means with a telephone signal line.

4,461,928

TELEPHONE CHARGE SYSTEM FOR DISPLAYING ALLOTMENT OF CHARGES BETWEEN A CALLING PARTY AND A CALLED PARTY

Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corporation, Tokyo, Japan

Filed May 19, 1982, Ser. No. 379,832
Claims priority, application Japan, May 22, 1981, 56-77478
Int. Cl.³ H04M *15/18*
U.S. Cl. 179—7 R **5 Claims**



1. A telephone charge displaying system comprising:
means for detecting and identifying one of an originating and a terminating call;
a first oscillation circuit in said detecting means which oscillates at a first frequency when a handset is placed off hook;
a second oscillation circuit in said detecting means which oscillates at a second frequency having a predetermined ratio to the first frequency in accordance with a charging ratio between a calling party and a called party after an off-hook signal is detected when a handset is hooked off in response to a ringing;
a first counter which counts, in units of at least seconds, signals of the first or second frequency in response to an originating or terminating call and which keep counting the signals to integrate a count value until the count value is cleared after being set once;
a second counter which counts the signals of the first and second frequencies for each call until the end of the call;
a first display unit for displaying the integrated count value of said first counter; and
a second display unit for displaying a count value of said second counter at least until an origination of a next call.

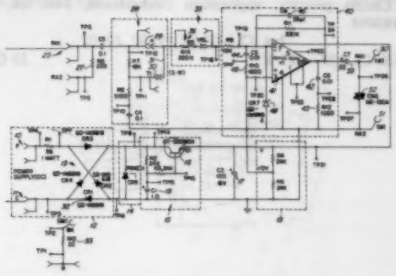
4,461,929

AMPLIFIER FOR ELECTRONIC AND ELECTRO-MECHANICAL TRANSMITTERS

Roger W. Britt, London, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 27, 1982, Ser. No. 423,619
Int. Cl.³ H04M *1/00*
U.S. Cl. 179—81 B **9 Claims**

1. In a telephone set having a base and a handset, said base including a telephone network and means for connecting a telephone line to said network, said telephone line providing a power supply to said network and said handset including a receiver;
a receive amplifier mounted in said handset, said receive amplifier being compatible with both electronic and electro-mechanical transmitters, said receive amplifier comprising:
a power supply circuit having an input and means connecting the input of the power supply circuit to the power supply of said network in parallel with the network; an operational amplifier driven by a power supply from said power supply circuit, said operational amplifier being in series with said power supply circuit and the receiver; means for supplying a signal to an input of the operational amplifier and including a signal amplitude adjuster circuit having two alternate outputs, a first output for use with an electronic transmitter and a second output for use with an electro-mechanical transmitter, said operational amplifier



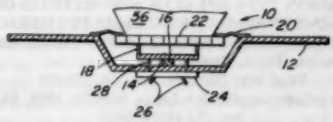
being connected selectively to one of said outputs, said operational amplifier being stabilized to operate at low voltages down to about 1.1 volts and capable of working at higher voltages up to at least about 20 volts, and means connecting the output of the operational amplifier to the receiver.

4,461,930

ACOUSTIC TRANSDUCER WITH HONEYCOMB DIAPHRAGM

Louis Melillo, Crystal Lake, Ill.; Tsutomu Haga, Teppo, and Iwao Sashida, Chichibushi, both of Japan, assignors to Pioneer Speaker Components, Inc., Arlington Heights, Ill.

Filed Sep. 23, 1982, Ser. No. 422,018
Int. Cl.³ H04R *17/00*
U.S. Cl. 179—110 A **20 Claims**



1. An acoustic transducer which comprises:
(a) a piezoelectric element to convert stimuli between electrical and acoustical energy states, the piezoelectric element characterized by a major surface on one or the other side of the piezoelectric element;
(b) means to support the piezoelectric element;
(c) conductive means to provide or receive electrical stimuli to or from the piezoelectric element;
(d) a coupling means which comprises a sheet material peripherally secured at the one edge thereof to the one major surface of the piezoelectric element in an acoustically coupled relationship with the major surface of the piezoelectric element; and
(e) a generally honeycomb sheet diaphragm material having a one and another side, the diaphragm material having a high stiffness-to-weight ratio and capable of acoustical vibration generally in a piston-type mode, the one side of the diaphragm material secured to the other peripheral edge of the sheet material of the coupling means, the honeycomb diaphragm material spaced apart from the piezoelectric element by the coupling means and acoustically coupled thereto by the other edge of the coupling means.

4,461,931
FREQUENCY RESPONSE EQUALIZING NETWORK FOR AN ELECTROSTATIC LOUDSPEAKER

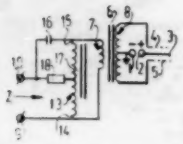
Bernardus G. Peters, No. 6 Adelbrechtbaarde, 7329 AT Apeldoorn, Netherlands

Filed Jun. 21, 1982, Ser. No. 390,649

Claims priority, application Netherlands, Jun. 26, 1981, 8103095

Int. Cl.³ H04R *19/00, 19/02*

U.S. Cl. 179—111 R **23 Claims**



1. An electrostatic loudspeaker system comprising an electrostatic loudspeaker having an electrically polarized or polarisable diaphragm arranged between two perforated electrically conductive plates to which an audio signal covering a predetermined frequency range can be applied through two input terminals, a frequency-response equalizing network comprising a resistor, a capacitor and an autotransformer winding having opposite end terminals and at least one intermediate tap, one end terminal of which winding is directly connected to one of said input terminals, the other end terminal of which winding is connected through said capacitor to the other of said input terminals and the tap being connected through said resistor to said other input terminal and means connecting said end terminals of said autotransformer winding to said perforated electrically conductive plates for supplying a frequency response equalized audio signal to said plates so that the variation of input impedance of the electrostatic loudspeaker system over said predetermined frequency range is reduced.

4,461,932
RIBBON TYPE SPEAKER AND METHOD OF ASSEMBLING MAGNETIC CIRCUIT THEREOF

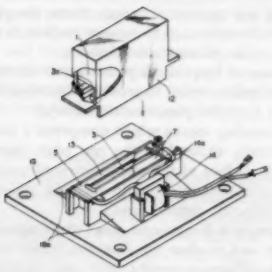
Takashi Oyaba, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 20, 1981, Ser. No. 265,495

Claims priority, application Japan, May 21, 1980, 55-68742

Int. Cl.³ H01R *9/00*

U.S. Cl. 179—115 V **33 Claims**



1. A ribbon-type speaker comprising:

magnetic circuit means comprising a permanent magnet and a pair of yokes disposed adjacent opposite sides of said magnet and having inwardly bent portions forming a magnetic gap therebetween; and

vibration system means distinct from said magnetic system means and comprising a ribbon-like conductive vibration plate; a matching transformer; means for supplying an audio signal current from said transformer to said vibrating plate; and support means for supporting said vibrating plate; said transformer, said feeder lines, and said support means having an opening formed therein in a predetermined shape, said magnetic circuit means being secured to said support of said vibration system means.

4,461,933
ELECTRICAL/MECHANICAL TRANSDUCERS

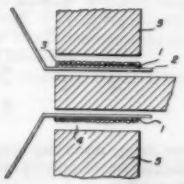
Donald M. Chave, The Granary, Jackass La., Keston, Kent, England BR2 6AN

Filed Dec. 11, 1980, Ser. No. 215,375

Claims priority, application United Kingdom, Dec. 12, 1979, 7942880

Int. Cl.³ H04R *9/04*

U.S. Cl. 179—115.5 VC **3 Claims**



1. An electromechanical loudspeaker of the moving-coil type including magnetic pole pieces defining an air gap within which the coil is at least partially located, the coil having in moving association with it, magnetisable material operative to interact with the magnetic field produced by the said pole pieces to damp movement of the coil, and wherein when the coil is at rest said magnetisable material is located wholly within the axial extent of said air gap and symmetrically with respect to the axial limits thereof, and the coil occupies substantially the fill axial extent of the air gap.

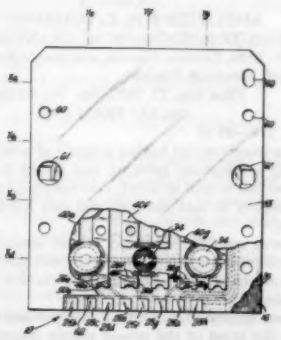
4,461,934
CLICK DISC SWITCH ASSEMBLY

Gary D. Jabbes, Shreveport, La., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Dec. 20, 1982, Ser. No. 451,358

Int. Cl.³ H01H *13/70*

U.S. Cl. 200—5 A **10 Claims**



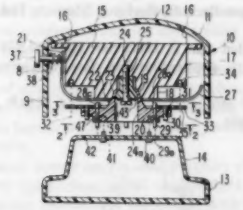
1. In a click disc switch assembly comprising: a printed wiring board including an electrically insulative base member and a plurality of first and of second electroconductive paths on such member, an array of electroconductive strips overly-

ing such member, each such strip having an electromechanical coupling to a respective one of said second paths and having formed therein a plurality of click discs each adapted by depression to touch a respective contact pad in one of said first paths so as to electrically connect such first path through such strip to such second path respective to that strip, an insulating layer interposed between said strips and paths and having apertures for passage therethrough of said click discs, and a sealing sheet covering said strips; the improvement comprising the features that: said strips are of steel and said paths are of copper foil underlain by adhesive material bonding such foil to said base member, said second paths each include a bonding pad of such copper foil, and said electromechanical coupling of each such strip to its corresponding second path is included in a securement of such strip to said base member by a junction structure comprising: (a) a weld zone in which steel of such strip is coalesced with copper of such bonding pad of such path to weld together a layer portion of such strip and a layer portion of such copper, and which weld zone is centrally disposed within the periphery of, and substantially smaller than, such bonding pad, (b) said two layer portions so joined by said weld zone, (c) copper of said bonding pad peripherally surrounding and integral with said welded copper layer portion, and (d) adhesive material underlying such surrounding copper and bonding it to said base member.

4,461,935
VIDEO CONTROLLER SPRING MOUNTING

John L. Guenther, Aptos, Calif., assignor to Texticon, Santa Clara, Calif.

Filed Feb. 24, 1983, Ser. No. 469,612
Int. Cl.³ H01H *13/70, 25/00*
U.S. Cl. 200—5 R **14 Claims**



1. Means for mounting a spring for a switch mechanism contained in a two-part container, said spring having connected outer and inner rings, said rings being adaptable to be flexed with respect to each other, comprising,

(a) a first mounting means mounted on one part of the container and having a curved bearing recess on one surface;

(b) means to mount one of said spring rings to said means;

(c) a switch operator holding member including an extension having a curved bearing surface in bearing contact with said mounting means recess and adapted for universal movement with respect to said recess;

(d) means to mount the other of said spring rings to said holding member whereby said spring is situated between said block and said holding member;

(e) electrical switch contact means extending between said block and said holding member;

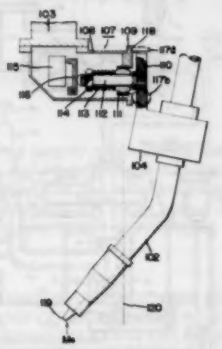
(f) means to attach said holding member to the other part of the container, whereby said spring allows universal tilting motion between the two parts of said container; and

(g) switch operators mounted in and extending from said holding member and spaced from said switch contact means in a non-tilting position of said container parts, at least one of said switch operators being movable into and out of contact with said switch contact means to make and break electrical contact when said parts are tilted with respect to each other.

4,461,936
CONTACT SENSING DEVICE

Kaoru Kimura, Kitakyushu, and Mitsuyoshi Nakano, Munakata, both of Japan, assignors to Yaskawa Electric Mfg. Co., Ltd., Kitakyushu, Japan

Filed Mar. 18, 1982, Ser. No. 359,446
Int. Cl.³ H01H *3/16*
U.S. Cl. 200—61.41 **6 Claims**



1. Contact sensing device for detecting contact of a moving element with a fixed body comprising:

(a) a support-side member having an end plate at one end thereof,

(b) a work-side member for holding a working jig having a roller mounting plate at one end thereof, said roller mounting plate having a roller mounting surface thereof facing a corresponding roller supporting surface on said end plate of said support-side member,

(c) a spherical bearing mounted on said end plate of said support-side member,

(d) a slide shaft disposed in said support-side member and slidably mounted on said spherical bearing, said slide shaft being slidable in an axial direction and pivotable in all radial directions along with the pivoting of said spherical bearing relative to said end plate, said slide shaft having one end passing through said end plate and fixedly connected to the center of said roller mounting plate of said work-side member, the other end of said slide being rounded and having a nut thereon,

(e) at least three rollers circumferentially mounted on said roller mounting plate of said work-side member, said rollers being operable to contact said roller supporting surface of said end plate of said support-side member,

(f) an elastic member mounted on said slide shaft, said elastic member having one end thereof in contact with said nut and the other end in contact with said spherical bearing, thus making said rollers on said roller mounting plate biasingly contact said roller supporting surface of said end plate when said end plate is parallel to said roller mounting plate,

(g) at least one roller engaging member mounted on said roller mounting plate along a path on which one of said rollers moves when said roller mounting plate rotates about the axis of said slide shaft, and

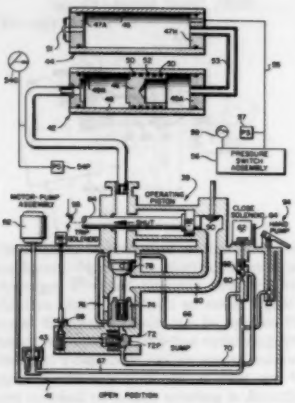
(h) a limit switch disposed in said support-side member, said limit switch coming into contact with said other end of said slide shaft and being actuated by the axial and radial displacement of said slide shaft which is effected by the movement of said work-side member.

4,461,937

FAIL-SAFE HYDRAULICALLY OPERATED CIRCUIT BREAKER ACCUMULATOR ARRANGEMENT

Richard R. Boni, McMurray, Pa., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Sep. 18, 1981, Ser. No. 303,557
Int. Cl.³ H01H *35/38*
U.S. Cl. 200—82 B **13 Claims**



1. In a circuit breaker having an interrupting unit carried within a housing, the interrupting unit having an electrical contact member which is movable between a closed and a tripped position, a contact operating mechanism:

a. hydraulic motor means, operating in response to pressurized fluid supplied thereto, for moving said electrical contact member between its closed and tripped positions;

b. an accumulator, in fluid communication with said motor means, for storing hydraulic fluid under pressure, said accumulator defining a housing and stroking means for dividing the interior of said housing into two pressure chambers, one of said pressure chambers being in fluid communication with said motor means and with the second pressure chamber filled with a gas; and

c. gas supply means, separately disposed from said accumulator, for supplying gas under pressure to said second pressure chamber, said gas supply means defining a fixed volume of gas which for a pre-selected pressure provides sufficient energy to the hydraulic fluid in said first pressure chamber to operate said motor means to move said contact member between its closed position and its tripped position.

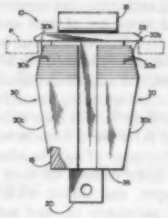
4,461,938

SWITCH CASE CONSTRUCTION

Richard W. Sorenson, Avon, Conn., assignor to Carlingswitch, Inc., West Hartford, Conn.

Filed Aug. 30, 1982, Ser. No. 412,765
Int. Cl.³ H01H *9/02*
U.S. Cl. 200—296 **5 Claims**

1. A switch case adapted to being mounted in variously sized rectangular panel openings, said openings having side and end edges, and wherein the panels may have a range of thickness, said case comprising an upwardly open rectangular housing having first and second opposed pairs of walls associated with said opening side edges and end edges, said walls integrally joined at their adjacent vertical edges to form four corners, said housing having a bottom wall integrally joined to the bottom edges of said pairs of walls, said housing also having an integrally formed outwardly extending peripheral flange adjacent the upper edges of said first and second pairs of walls, and four resilient wings integrally connected to the bottom edges of one of said first and second pairs of walls, said wings arranged in adjacent pairs proximate said corners, said wings normally projecting upwardly and outwardly with respect to the pair of walls said wings are connected to so that upper end portions thereof can be resiliently biased to move toward the pair of walls said wings are connected to, said upper end portion having outside edges which normally extend out beyond



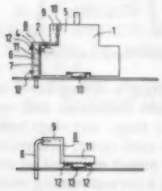
the pair of walls said wings are not connected to so that said outside edges are adapted to engage the side edges or end edges of rectangular panel openings not associated with said pair of housing walls to which said wings are connected to resiliently bias said wings to move parallel to said walls said wings are connected to and toward one another.

4,461,939

SWITCHGEAR WITH Z-SHAPED INSULATING TERMINAL COVER

Willy Sabisch, Theuern, and Friedrich Hufnagel, Sulzbach-Rosenberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 2, 1982, Ser. No. 364,976
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1981, 3115100
Int. Cl.³ H01H *9/02;* **H02B** *1/14;* **H01R** *13/44*
U.S. Cl. 200—304 **4 Claims**

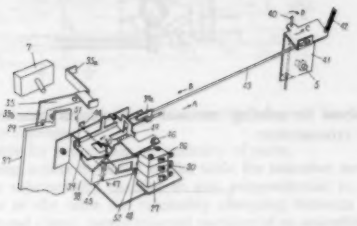


1. In combination, electrical switch gear disposed on a standardized mounting, said switch gear comprising a terminal region having a plurality of spaced terminals and an adjacent upper part with a boundary wall set back from the terminal region; a plurality of spaced connecting leads connected to respective said spaced terminals; a Z-shaped body of insulating material with a first arm of the body extending parallel to said boundary wall of said upper part of the switch gear adjacent said boundary wall and a second arm, spaced from said first arm, covering said terminal region; said first arm having an outer surface facing away from said boundary wall, said outer surface containing outward facing longitudinal slots, said slots being at least equal in number to the number of connecting leads at said terminal region, and said slots spaced apart an amount equal to the spacing of said connecting leads; said second arm having an outer surface facing away from said switch gear, said outer surface containing mounting parts for connecting to a said standardized mounting.

4,461,940
FAIL-SAFE DEVICE FOR USE IN A HEATING APPARATUS

Yohzoh Ishimura, Kashihara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP81/00198, 371 Date Mar. 25, 1982, 102(e) Date Mar. 25, 1982, PCT Pub. No. WO82/00873, PCT Pub. Date Mar. 18, 1982
PCT Filed Aug. 27, 1981, Ser. No. 364,937
Claims priority, application Japan, Aug. 29, 1980, 55-120041
Int. Cl.³ H05B *6/68*
U.S. Cl. 219—10.55 C **4 Claims**



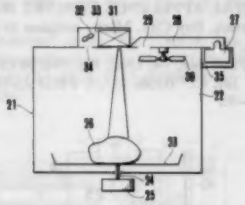
1. A heating apparatus comprising:
a main body,
an operational panel portion disposed on said main body,
a heating chamber for receiving a food to be heated,
a heat source provided for heating said food,
a door for opening and closing movement in said heating chamber,
a plurality of door switches being turned on and off by the opening and closing movement of said door,
a main circuit for supplying said heat source with power,
an electronic control circuit for controlling the main circuit for said heat source,
a door open/close signal switch responsive to the turning on and off of said plurality of door switches,
a cook start switch for starting the heating of said food,
a cook start button means for indirectly turning on the cook start switch,
said cook start button means, said plurality of door switches, said door open/close signal switch, and said cook start switch being operatively associated with each other,
wherein said door open/close signal switch is rendered operative only when the plurality of door switches are turned on, said cook start switch is rendered operative only when said door open/close signal switch is operative, and said electronic control circuit is rendered operative only when the cook start switch and said door open/close signal switch are both turned on.

4,461,941
MICROWAVE OVEN WITH INFRARED TEMPERATURE DETECTOR

Norisuke Fukuda, Tokyo, and Susumu Miyazawa, Chigasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 26, 1982, Ser. No. 382,284
Claims priority, application Japan, Nov. 16, 1981, 56-182354
Int. Cl.³ H05B *6/68*
U.S. Cl. 219—10.55 B **3 Claims**

1. A microwave oven comprising:
a heat chamber;
means for heating an object in said heat chamber;
detector means for detecting infrared rays irradiated from an object in said heat chamber, said detector means including an infrared sensor producing a sensor output;
a chopper for alternately interrupting the path of said infrared rays to said detector means in response to an alternating signal;
an oscillator for producing said alternating signal to drive said chopper at a predetermined period; and

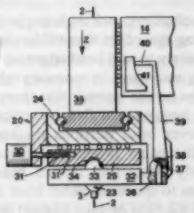


means for producing a signal which has the same period as said alternating signal for driving said chopper and has a timing delay relative to said alternating signal and for synchronously detecting said sensor output of said infrared sensor in response to said delayed signal.

4,461,942
APPARATUS FOR ORIENTING THE WIRE ELECTRODE SUPPORT AND GUIDE MEMBER AND THE MACHINING FLUID NOZZLE OF A TRAVELLING WIRE EDM APPARATUS

Roger Delpretti, Vernier, Switzerland, assignor to Ateliers des Charmilles S.A., Geneva, Switzerland

Filed Jul. 3, 1982, Ser. No. 395,297
Int. Cl.³ B23P *1/08*
U.S. Cl. 219—69 W **3 Claims**



1. In a travelling wire EDM apparatus wherein a workpiece is cut by electrical discharges between an electrode wire and said workpiece, said apparatus comprising a pair of electrode wire guide members, support means for said workpiece and means for relatively displacing said electrode wire guide members and said workpiece support means such as to cut said workpiece according to a desired shape, and a mechanism for orienting at least one unitary assembly comprising one of said electrode wire guide members and a nozzle for injecting machining fluid in a machining zone between said electrode wire and said workpiece, said mechanism comprising support means for said unitary assembly, said unitary assembly support means being controllably displaceable in directions transverse to the longitudinal axis of said electrode wire for inclining said electrode wire relative to said workpiece, a universal joint member attaching said unitary assembly to said unitary assembly support means, and a pair of fingers mounted on said unitary assembly, said fingers having each an end portion engaged on a ramp surface attached to a stationary portion of the EDM apparatus, each said ramp surface being oriented such that transverse displacement of said unitary assembly support means causes an angular displacement of said unitary assembly, whereby said unitary assembly is constantly oriented automati-

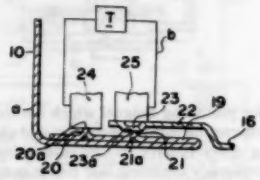
cally along the longitudinal axis of said wire in the machining zone.

4,461,943

PROCESS FOR FORMING WELDED PREPAINTED METAL APPLIANCE CABINET WALLS

Rene G. Beauvais, Bay City, Mich., assignor to RWC Inc., Bay City, Mich.

Filed Jun. 14, 1982, Ser. No. 387,929
Int. Cl.³ B23K *11/14*; F25D *23/06*
U.S. Cl. 219—93 **15 Claims**



1. A process for forming the wall of a prepainted metal cabinet or the like, such as by resistance welding a weldable panel to a prepainted appliance cabinet wrapper, having opposed side walls, painted on the exterior wall surface thereof, comprising the steps of:

a. folding flange sections on said cabinet wrapper at generally 90° to said side walls, to function as the marginal edge portions of a wall connecting said side walls, with the folded sections being deformed to form recessed projecting bead portions therein along said edge portions with interiorly facing bead edges providing electrical contact surfaces;

b. forming a weldable panel with projecting bead portions arranged along the edges thereof having bead edges projecting oppositely to said bead edges on the flange sections and disposing said panel in spanning relationship with the flange sections on the interior side thereof, with the edges of the panel lapping said flange sections interiorly sufficiently to cover bead portions thereon, and with bead portions in the panel projecting toward and in contact with interiorly projecting lapped bead portions in the flange sections to space the panel from the flange sections;

c. contacting a portion of said contact surface on a flange section with one of a pair of series connected electrodes and the portion of said panel opposite a bead portion formed therein with a second electrode; and

d. applying welding current to said electrodes.

4,461,944

SYSTEM FOR INTERFACING AN ENCODER TO A MICROCOMPUTER

Robert K. Cohen, Troy, N.Y., assignor to General Electric Company, Schenectady, N.Y.

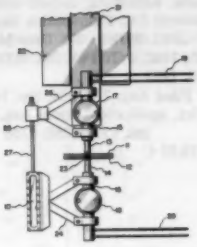
Filed Jun. 7, 1982, Ser. No. 386,152
Int. Cl.³ B23K *11/24*
U.S. Cl. 219—110 **8 Claims**

1. In a resistance spot welder control system having a microcomputer, an encoder with phase quadrature outputs, and a displacement interface, the improvement wherein said interface appears to the microcomputer as part of its memory and comprises:

means for converting the encoder quadrature output signals to up and down pulses which each represent a unit of displacement in respectively positive and negative directions;

up-down counter means to which said pulses are fed and that has binary displacement data at its output;

address decode circuitry having an active state output indicating a memory read operation is to be performed from said interface; and



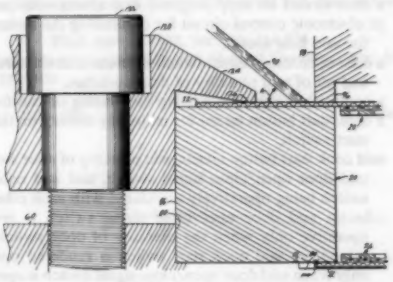
means for reading out said displacement data to the microcomputer.

4,461,945

FILTER LEAF AND METHOD AND APPARATUS FOR MAKING SAME

Theodore H. O'Cheskey, and Hugh T. Edwards, Jr., both of Whittier, Calif., assignors to United States Filter Fluid Systems Corporation, Whittier, Calif.

Filed Aug. 11, 1980, Ser. No. 177,265
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LC **30 Claims**



1. Apparatus for welding two parts together, the apparatus comprising:

the first circular plate adapted to support the two parts in a stacked condition;

a second circular plate having a surface spaced from the first plate and adapted to contact one of the two parts so the two parts are clamped together between the two plates;

means for moving the second plate toward and away from the first plate so the surface on the second plate can contact one of the two parts and clamp them together between the two plates, the second plate being of a size adapted to leave a portion of the clamped parts exposed around their entire periphery;

a source of welding beam energy selected from the group consisting of a laser source and an electron beam source arranged and adapted to direct a high-energy welding beam against the exposed portion of the clamped parts; and

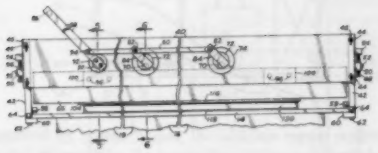
means for rotating the plates relative to the welding beam to weld the parts around their entire periphery.

4,461,946

APPARATUS FOR CLAMPING AN ASSEMBLY OF PARTS FOR LASER WELDING

Eric L. Kratschmer, Doylestown, Pa., assignor to Hull Corporation, Hatboro, Pa.

Filed Mar. 11, 1982, Ser. No. 355,201
Int. Cl.³ B23K 27/00
U.S. Cl. 219—121 LC 11 Claims



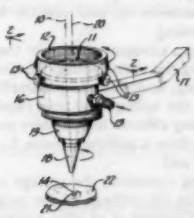
1. Apparatus for clamping an assembly of parts for laser welding comprising:
(a) a table for supporting an assembly of parts,
(b) clamp means mounted on the table for selective movement substantially parallel to and perpendicular to the plane of the table for releasably clamping between the table and clamp means selected portions of an assembly of an assembly of parts to be welded, and
(c) laser welding means mounted adjacent the table for movement of its laser beam substantially normal to the direction of movement of the clamp means.

4,461,947

ROTATING LASER BEAM WITH COINCIDENT GAS JET

Kenneth R. Ward, San Jose, Calif., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Aug. 24, 1982, Ser. No. 411,060
Int. Cl.³ B23K 27/00
U.S. Cl. 219—121 FS 5 Claims



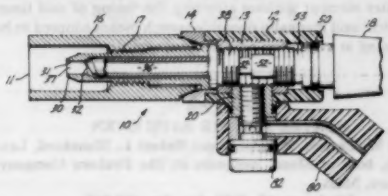
1. An apparatus for providing to a surface a rotating laser beam and coincident gas stream comprising:
optical means (11) for deflecting an incident laser beam onto a spot in a plane normal to the incident beam,
a stationary gas plenum (16) in communication with means for conveying the gas through an outlet nozzle (18) to the spot, and
mounting means (12, 19, 30) for rotatably holding the optical means and nozzle for synchronous motion that causes the spot to trace a circular arc in the plane, and in which
the optical means has an optical axis and the nozzle has an axis of symmetry;
the mounting means
(a) is rotatable about an axis that coincides with the incident beam and
(b) holds the optical means and nozzle with their respective axes substantially aligned and substantially parallel to the incident beam; and
a plurality of seals between the mounting means and the stationary gas plenum each comprise a first O-ring (35) of a low-friction material, in contact with the mounting means, and, in contact with the first O-ring, a second O-ring (36) of a resilient material in contact with the stationary gas plenum.

4,461,948

COLLET SYSTEM FOR ARC WELDING TORCHES

Donald R. Watts, 6004 - 4th Street Ct. NE., Tacoma, Wash. 98422

Continuation-in-part of Ser. No. 278,679, Jun. 29, 1981, abandoned. This application Jul. 22, 1981, Ser. No. 286,018
Int. Cl.³ B23K 9/28; B23B 31/10
U.S. Cl. 219—136 4 Claims



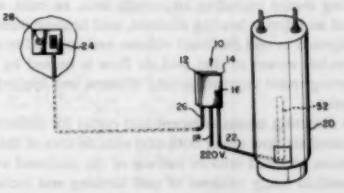
4. In a welding torch having a tubular collet for holding an electrode, said collet having a means for fastening the collet to a torch back cap, comprising:
a collet ferrule attached to said collet and having a insertable end opposite said collet;
a spring arranged around said insertable end and held thereon by an elarged portion of said insertable end;
a back cap having an opening smaller than said spring and a bore thereto having a relieved portion therein; whereby said insertable end is retained in said back cap;
a passage in said collet to receive an electrode;
an asymmetrically tapered forward end to said collet;
a sleeve means having an interior rearwardly flaring surface adjacent an open passage there through, said open passage having an inside wall adapted to engage an electrode; and
means to drive said tubular collet against said rearwardly flaring surface; whereby driving pressure on said collet relative the rearwardly flaring surface crowds said collet laterally thereby gripping an electrode between said collet and said inside wall.

4,461,949

ELECTRIC HOT WATER HEATER ENERGY SAVER

John R. Weiser, R.D. #2, Box 419, Sunbury, Pa. 17801

Filed Jun. 10, 1982, Ser. No. 387,090
Int. Cl.³ F24H 1/20; H05B 1/02
U.S. Cl. 219—334 12 Claims



1. An electric hot water heater energy saver, comprising:
an electrically operated timer provided with electrical contacts operated directly by a timer motor, said contacts being operable to close and open an electrical circuit at least once a day;
means for connecting a source of electrical energy to said timer motor and to said electrical contacts;
means for connecting said contacts in series between an

electrical heater element of an electric hot water heater and said source of electrical energy;

means for producing a signal voltage of smaller magnitude than the magnitude of the voltage of said source of said electrical energy;

contactor means provided with contacts connected across said timer motor operated contacts;

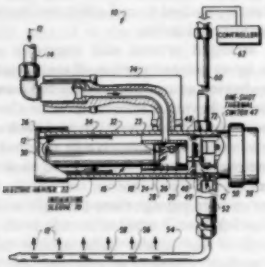
means for operating said contactor means; and

manually operable switch means connected in series with said signal voltage and said means for operating said contactor means whereby the effect of said timer motor operated contacts may be bypassed to operate said hot water heater element without affecting the timing of said timer motor, said manually operable switch means adapted to be located at a location remote from said timer.

4,461,950
HEATER FOR AIR BATH OVEN

Richard W. Curless, Westford, and Robert L. Blanchard, Lexington, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Aug. 17, 1982, Ser. No. 408,968
Int. Cl.³ B01D *15/08*; F24H *3/04*
U.S. Cl. 219—368 **10 Claims**



1. An apparatus for heating chromatographic equipment disposed within an oven enclosure, said apparatus comprising:

air supply means for generating an air flow having a pressure greater than ambient and thereby resulting in said air flow being forced through said apparatus;

a housing including interior and exterior surfaces which form an enclosed volume that has a longitudinal axis extended therethrough;

first conduit means for connecting said air supply means to said housing and for passing said air flow into said enclosed volume;

heating means including an outside area, an inlet, an outlet and an interior heating element, said heating means being disposed in said enclosed volume and coupled to said first conduit means so that said air flow is heated by flowing through said interior heating element and applied to said outlet;

flow directing means adjacent said outlet for deflecting said heated air flow along both said outside area of the heating means and said interior surface of the enclosed volume;

a manifold being external of said housing and including an elongated portion disposed parallel to said longitudinal axis;

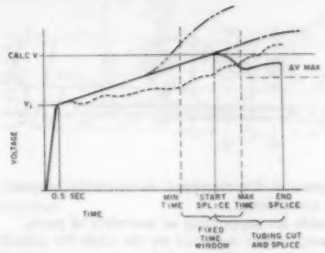
second conduit means for connecting said manifold to said enclosed volume of the housing and for passing said deflected heated air flow into said elongated portion; and

said elongated portion including an opening which is opposite said housing so that said deflected heated air flow passes therethrough for impinging on said exterior surface of the housing.

4,461,951
METHOD OF MONITORING THE TEMPERATURE OF A STERILE DOCKING CUTTING MEANS

Robert P. Luoma, II, and Helen E. Roxlo, both of Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 16, 1982, Ser. No. 408,416
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—497 **19 Claims**



9. A method of monitoring the temperature of a cutting means in an apparatus for sterile connection wherein two thermoplastic tubes are sterilely spliced with a hot cutting means and said cutting means is a heating element consisting essentially of, as an outer layer, a folded sheet of metal having a thermal conductivity of at least about 173 watts/m°K. at a thickness of 0.10 mm and a tensile yield strength of at least about 34×10^4 kPa at a 0.10 mm thickness; a resistor disposed inside the fold of said folded sheet of metal; and a layer of dielectric adhesive, stable to about 260° C., between inner surfaces of said folded sheet of metal and surfaces of said resistor, thereby bonding the resulting structure together; said resistor having a known approximate resistance and known positive or negative temperature coefficient of resistance but the actual resistance of said resistor being unknown; said method comprising

(1) supplying a constant current to the resistor;

(2) measuring the initial voltage across the resistor;

(3) calculating, according to predetermined empirical relationships, the voltage and time required to achieve a desired heating element temperature provided that the initial voltage is from a minimum value V_1 to about a maximum value V_2; and

(4) measuring repeatedly the voltage and time to determine whether (a) the voltage of the resistor has reached the calculated voltage at or after a desired time, T_1, and before a desired time, T_2, or (b) the calculated time has been reached after a measured voltage of V_3 and before a measured voltage of V_4.

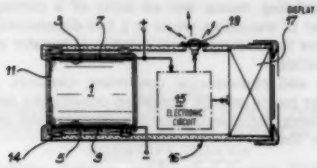
4,461,952
PORTABLE COMPUTING DEVICE FOR MEASURING RADIATIONS

Robert Allemand, Saint Ismeer; Michel Laval, Grenoble, and Pierre Parot, Seyssinet, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 19, 1981, Ser. No. 312,774
Claims priority, application France, Oct. 24, 1980, 80 22814; Mar. 23, 1981, 81 05754
Int. Cl.³ G01T *1/22*
U.S. Cl. 250—370 **7 Claims**

1. Portable computing device comprising means for adding digital information, means for determining periods of time and display means, and a nuclear detector adapted to deliver electrical signals whose amplitude spectrum depends in a one-to-one relationship on the energy spectrum of the radiation in which it is placed and means for converting these signals into digital information, electronic means for compensating the

sensitivity of the detector as a function of the energy of the radiation so as to render it identical to that of human tissues so that the detector produces an output signal which is in a constant ratio with the energy of said radiation which may be



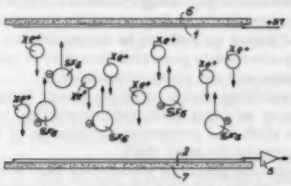
absorbed by human tissues, the addition means receiving said digital information, the means for determining periods of time controlling said addition means so as to make a calculation of the dose of nuclear radiation received during a period of time, called integral dose, which is displayed by said display means.

4,461,953

X-RAY DETECTOR FOR DETECTING X-RAYS HAVING PASSED THROUGH AN OBJECT OR ORGAN

Robert Allemand, Saint Ismier; Jean-Jacques Gagelin, Vinay, and Edmond Tournier, Grenoble, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 30, 1982, Ser. No. 363,616
Claims priority, application France, Apr. 15, 1981, 81 07567
Int. Cl.³ G01T 1/18
U.S. Cl. 250—374 **5 Claims**



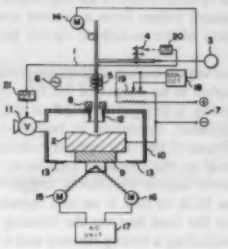
1. In an X-ray detector, adapted for example to detect the rays having passed through an object or an organ, furnished by a source emitting towards the object a plane beam of incident X-rays, said beam having a wide angular aperture and being of small thickness, said detector comprising at least one tight ionization chamber containing at least one gas ionizable by the rays issuing from the object and, in this chamber, a plate for collecting the charges resulting from ionization of the gas, this plate being parallel to the plane of the beam of incident rays and being taken to a first potential, and a series of electrodes for collecting the charges resulting from ionization of the gas, these charge collecting electrodes being taken to a second potential and being directed towards the source, in a plane parallel to the plane of the beam of incident rays, opposite the electron collecting plate, there charge collecting electrodes furnishing a current resulting from ionization of the detector gas opposite each of the electrodes under the effect of the X-rays, the ionization chamber further contains a gas capable of creating, in the mixture thus formed, a movement of gas opposite the movement of the ions, the electrodes being formed by conducting bands deposited on an insulating support, these bands converging in the direction of the source and being electrically insulated from one another.

4,461,954

ION-PROCESSING METHOD AND APPARATUS

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Apr. 19, 1982, Ser. No. 369,542
Claims priority, application Japan, Apr. 20, 1981, 56-59992
Int. Cl.³ G21K 1/00
U.S. Cl. 250—492.2 **26 Claims**



1. A method of processing a workpiece with a beam of energetic ions, comprising the steps of:

positioning a slender tubular member to bring an open end thereof into spaced juxtaposition with a workpiece across a small gap of a size ranging between 10 and 1000 μm in an evacuated space;

supplying said tubular member with an ionizable gas for feeding it into said gap through said open end;

energizing said supplied gas to form ions thereof and supplying an electrical potential to said ions to propel them in a beam across said small gap to impinge onto a limited area of the surface of said workpiece juxtaposed with said open end; and

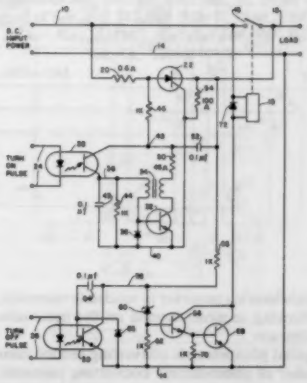
maintaining the pressure within said small gap in excess of the pressure in said space surrounding said small gap.

4,461,955

ISOLATED LOAD SWITCHING WITH SURGE SUPPRESSION

Thomas G. Bezdek, Littleton, Colo., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 30, 1982, Ser. No. 394,039
Int. Cl.³ H03K 17/00; H01J 40/14
U.S. Cl. 250—551 **7 Claims**



1. A switching circuit for connecting a source of D.C. power to a load, with surge suppression, the source being connected

between a supply line and a return line, and the load being connected between a load line and the return line, said switching circuit comprising:

a principal switching device for connecting the supply line to the load line;

a limiting resistor and an SCR connected in series from the supply line to the load line, by-passing the principal switching device;

first and second optical couplers having respective inputs for receiving control pulses from a remote control, for providing isolation of the switching circuit from the remote control;

a turn-on circuit which includes a blocking oscillator having an input coupled to an output of the first optical coupler, the SCR having a trigger coupled to an output of the blocking oscillator, operative in response to a turn-on pulse at the input of the first optical coupler to supply an initiating signal to the blocking oscillator, which in turn by regenerative action supplies a trigger signal to the trigger of the SCR to turn it on and thereby connect the supply line to the load line via the limiting resistor;

timing means including a timing resistor and a timing capacitor coupled between the load line and the return line for providing a delay;

amplifier means having an input connection from the timing means and an output connection to the principal switching device, which after said delay turns on the principal switching device to provide a direct connection from the supply line to the load line, the direct connection being effective to disable the turn-on circuit and to turn off the SCR; and

the second optical coupler being coupled to said amplifier means, operative in response to a turn-off pulse at the input of the second optical coupler to turn off the amplifier means, which turns off the principal switching device to disconnect the source of D.C. power from the load.

4,461,956

SOLID-STATE PHOTOELECTRIC CONVERTER

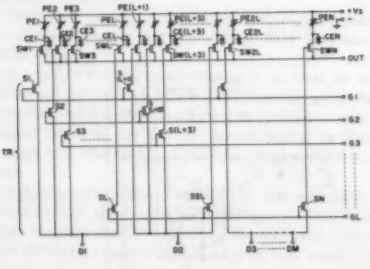
Katsunori Hatanaka, Yokohama; Yutaka Hirai, Tokyo; Naoki Ayata, Machida, and Shunichi Uzawa, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 247,763, Mar. 26, 1981, abandoned. This application Dec. 6, 1983, Ser. No. 558,573

Claims priority, application Japan, Mar. 31, 1980, 55-42211; Mar. 31, 1980, 55-42212; Mar. 31, 1980, 55-42213; Mar. 31, 1980, 55-42214

Int. Cl.³ H01J *40/14*

U.S. Cl. 250—578 **22 Claims**



1. A photoelectric converter in solidstate assembly, comprising the following sections formed on the same non-semiconductive substrate:

an elongated photoelectric converting section constituted of a number of photoelectric converting elements arranged in an array, each element having a light-receiving surface for input of light-information; and

a signal processing circuit section comprising a corresponding number of accumulating means, each provided for a corresponding one of said photoelectric converting elements, for accumulation of signals produced as output from the corresponding photoelectric converting elements, a corresponding number of transfer means each for transferring the signals accumulated in the corresponding accumulating means, and an array of a corresponding number of transistors wired in a two-dimensional matrix to drive the corresponding number of transfer means in time series;

wherein said photoelectric converting elements, and the transfer means and the transistors constituting said signal processing circuit section are constituted of thin semi-conductor films.

4,461,957

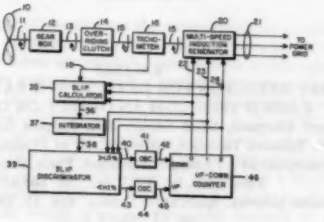
SPEED TOLERANT ALTERNATOR SYSTEM FOR WIND OR HYDRAULIC POWER GENERATION

Gale A. Jallen, Roseville, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Jun. 17, 1982, Ser. No. 389,523

Int. Cl.³ F03D *7/04, 7/00, 7/02, 9/00*

U.S. Cl. 290—44 **2 Claims**



1. In an electrical generating system of the type for use with a power source of independently variable energy, and producing electric power on paths to be connected to a power grid carrying synchronously generated electricity of predetermined voltage, frequency and phase, comprising:

(a) an overriding clutch receiving power from the power source at an input shaft and transmitting torque to an output shaft, and preventing transmission of torque from the output to the input shaft;

(b) an induction generator whose rotor shaft is connected to rotate with the clutch's output shaft, said generator having a plurality of synchronous speeds, each such speed selectable according to a control signal associated with said speed, and said generator's stator winding output terminals comprising the paths to be connected to the power grid;

(c) a tachometer connected to the input shaft of the generator and producing a signal whose value encodes the input shaft's speed;

(d) a slip calculator receiving the control signal and the tachometer signal, and responsive thereto, generating a slip signal encoding the slip at which the generator is operating, said slip becoming increasingly negative as generator speed increases above the synchronous speed encoded in the control signal; and

(e) slip discriminator means receiving the slip signal and the tachometer signal, for comparing the slip value encoded in the slip signal with a first preselected negative slip value and a second preselected slip value more negative than the first, each associated with the synchronous speed encoded in the control signal, and for issuing a control signal specifying a synchronous speed slower than the current synchronous speed responsive to the slip value encoded in the slip signal becoming more positive than the first preselected slip value, and for issuing a control signal specifying a synchronous speed faster than the current synchro-

nous speed responsive to the slip value encoded in the slip signal becoming more negative than the second preselected slip value.

4,461,958

DRIVE SYSTEM AND METHOD FOR AUTOMOTIVE VEHICLES, ESPECIALLY FLOOR VEHICLES SUCH AS FORKLIFT TRUCKS

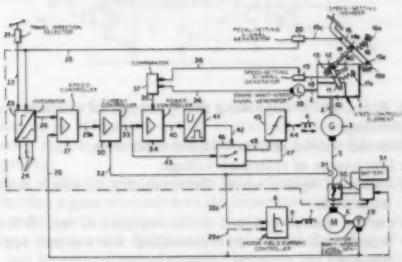
Erich Kröhling, Reinbek, and Manfred Kremer, Hamburg, both of Fed. Rep. of Germany, assignors to Still GmbH, Hamburg, Fed. Rep. of Germany

Filed Sep. 2, 1981, Ser. No. 298,738

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1980, 3033541

Int. Cl.³ B60L *11/02*; H02P *5/16, 5/00, 5/46*

U.S. Cl. 290—45 **22 Claims**



1. A control system for an engine/generator/motor set for a vehicle propelled by said set, said set comprising:

an internal combustion engine having a speed-controlling element;

a speed-setting member operatively connected to said speed-controlling element, said engine having an output shaft;

an externally excited electric current DC generator connected to said output shaft; and

an externally excited DC electric motor electrically connected to said electric current generator and having a motor shaft connected to a load for propelling said vehicle, said control system comprising:

a speed-setting signal generator connected to said speed-controlling element for generating signals representing a setpoint value of no-load engine speed determined by the position of said speed-controlling element;

an engine shaft-speed signal generator connected to said output shaft and generating signals representing the speed of said output shaft;

a motor shaft-speed signal generator connected to said motor shaft and generating signals representing the speed thereof;

a speed controller receiving signals from said speed-setting and motor shaft-speed signal generator and having a speed-controller signal output;

a power controller receiving said speed controller signal output as an input thereto;

a comparator receiving signals from said engine shaft speed and speed-setting signal generators, said comparator being connected to said power controller and supplying an input thereto; and

means connected to an output of said power controller for controlling the excitation of a field coil of said electrical current generator.

4,461,959

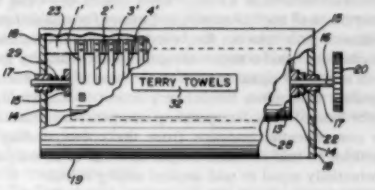
CONTROL SYSTEM FOR A LAUNDRY PROCESSING MACHINE

Norvin L. Pellerin, New Orleans, La., assignor to Pellerin Milnor Corporation, Kenner, La.

Division of Ser. No. 903,115, May 5, 1978, Pat. No. 4,195,498. This application Nov. 15, 1979, Ser. No. 94,804

Int. Cl.³ D06F *33/02*

U.S. Cl. 307—141 **8 Claims**



1. The combination of a laundry processing machine having an electrical control system, which system comprises a plurality of circuits each of which, when closed, causes the operation of a particular component of the machine, said machine having a controller for controlling a cycle of the machine in accordance with a plurality of preset functions by opening and closing said circuits in a preset sequence,

multi-position rotary selector means moveable to a plurality of positions for simultaneously modifying a plurality of said controller determined preset functions in any selected one of said positions, said selector means comprising:

a plurality of aligned switch means,

a programmable sheet moveable to a plurality of different positions with respect to said plurality of switch means for operating selected ones of said switch means in accordance with a pre-determined program formed on said sheet,

means connecting said plurality of switch means to said plurality of circuits in said machine, and

means for moving said sheet to a selected program position so that said plurality of preset functions of the controller are modified in response to setting said selector means to a selected position.

4,461,960

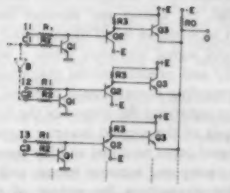
HIGH SPEED SWITCHING CIRCUIT

Soichiro Yasunaga, 2-28, Denenchofu, Ohta-ku, Tokyo, Japan

Continuation of Ser. No. 428,805, Sep. 30, 1982, which is a continuation of Ser. No. 147,858, May 8, 1980. This application Nov. 4, 1983, Ser. No. 549,009

Int. Cl.³ H03K *17/56*

U.S. Cl. 307—243 **5 Claims**



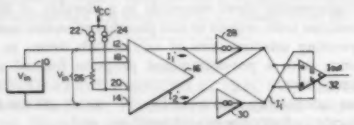
1. A switching circuit comprising: a plurality of switching channels each comprising a control transistor having its collec-

tor connected through a resistor to an input analog signal terminal to which an analog signal to be switched is applied, its emitter grounded, and its base connected to a control input terminal to which a switching control signal is applied; a compensating transistor having its base connected to the collector of said control transistor, its emitter connected to a load resistor, and its collector connected to a supply terminal; an output transistor opposite in polarity to said compensating transistor having its collector connected to a supply terminal, and its emitter connected to a load resistor and to an output terminal common to all such channels; and means for establishing a low resistance path between the base of said output transistor and the emitter of said compensating transistor whereby the polarity of a control signal applied to the base of each said control transistor determines the delivery or not of said analog signal to the base of the corresponding compensating transistor and the consequential emission from the corresponding output transistor to said common output terminal of an output signal substantially equal to said applied analog signal.

4,461,961
ACCURATE HIGH SPEED ABSOLUTE VALUE CIRCUIT AND METHOD

Larry J. Kendall, San Jose, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

Filed Nov. 19, 1981, Ser. No. 322,900
Int. Cl.³ H03K *5/00*
U.S. Cl. 307—261 **13 Claims**



1. An absolute value circuit for converting an input voltage signal of alternating polarity into a corresponding unipolar output current signal, the circuit comprising

differential voltage to current converter means for converting the input voltage signal into a first current and a second current whose difference represents the voltage input signal,

first slaved current inverter means for inverting the first current,

second slaved current inverter means for inverting the second current,

clamp and summer means having first and second signal input terminals, first and second control input terminals corresponding to the signal input terminals, and an output terminal, the clamp and summer means passing to the output terminal an input signal which is applied to one of the input signal terminals while a signal of an opposite polarity and predetermined magnitude is applied to the corresponding control input terminal,

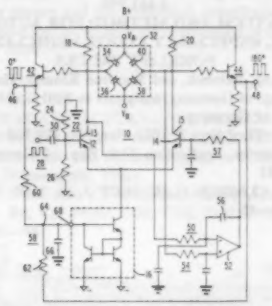
means for supplying the output of the first inverter means to the input of the second inverter means as well as to the first signal input terminal and the second control terminal of the clamp and summer means, and

means for connecting the output of the second inverter means to the input of the first inverter means as well as to the second signal input terminal and the first control terminal of the clamp and summer means, whereby a unipolar current output signal is produced which is the difference of the first and second currents and which corresponds in magnitude to the input voltage signal.

4,461,962
SQUARE-WAVE SYMMETRY CORRECTOR

Joseph F. Hacke, Blackwood; Arthur J. Banks, Cherry Hill, and Lucas J. Bazin, Vincentown, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 26, 1982, Ser. No. 342,801
Claims priority, application United Kingdom, Jan. 26, 1981, 8102284
Int. Cl.³ H03K *5/01, 5/08, 3/017*
U.S. Cl. 307—265 **6 Claims**



1. A circuit for improving the symmetry of a square wave, comprising:

first and second emitter-coupled transistors;

a first source of reference voltage;

a source of square waves the symmetry of which is to be improved;

a current source coupled to the emitters of said first and second transistors for controlling the current applied thereto;

coupling means coupled to the base of said first and second transistors, to said source of reference voltage and to said source of square waves for comparing the amplitude of said square waves with said reference voltage for switching said first and second transistors for alternate conduction for causing said current to alternately flow in the collectors of said first and second transistors;

a second source of reference voltage;

first switching means coupled to said collectors of said first and second transistors and to said second source of reference voltage for conducting at least a first portion of said current for clamping the collector of the one of said first and second transistors then conducting to a voltage determined by said second reference voltage and by the voltage drop across said first switching means when conducting the said first portion of said current;

a third source of reference voltage;

second switching means coupled to said third source of reference voltage and to said collectors of said first and second transistors for creating a clamp voltage determined by said third source of reference voltage and by the voltage drop across said second switching means;

a source of energizing voltage subject to variations;

resistance means coupled to said source of energizing voltage and to said collectors of said first and second transistors for conducting a second current to said second switching means during those periods in which one of said first and second transistors is non-conductive, said second current being variable in response to said variations in said energizing voltage thereby varying the symmetry of said square wave;

control voltage generating means coupled to said collectors of said first and second transistors for generating a control voltage indicative of the average value of the voltages at said collectors of said first and second transistors; and

coupling means for coupling said control voltage to said

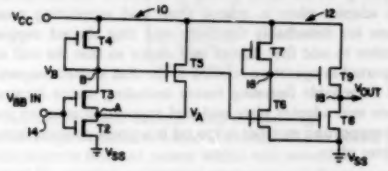
current source for controlling said current through said current source to be in the same sense as the changes in said second current through said resistance means for thereby controlling said first portion current in said same sense for thereby equalizing the current through said first and second switching means for equalizing the voltages thereacross and thereby improving the symmetry of said square waves in the face of changes in said energizing voltage.

4,461,963

MOS POWER-ON RESET CIRCUIT

Joannes J. M. Koomen, Eekhoornlaan, Netherlands, assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Jan. 11, 1982, Ser. No. 338,785
Int. Cl.³ H03K *17/22, 17/30, 17/687, 3/356*
U.S. Cl. 307—279 **12 Claims**



1. A reset circuit for providing a reset signal for at least one portion of an integrated circuit containing a semiconductor substrate region at a substrate bias voltage, the reset circuit comprising:

a pair of like-polarity depletion field-effect transistors, each having a gate responsive to the substrate bias voltage, one of the pair having a channel coupled between a first voltage supply and a first junction point, and the other of the pair having a channel coupled between the first junction point and a second junction point at which an intermediate signal is provided ;

load means coupled between the second junction point and a second voltage supply;

a like-polarity enhancement field-effect transistor having a gate coupled to the second junction point and having a channel coupled between the first junction point and the second voltage supply; and

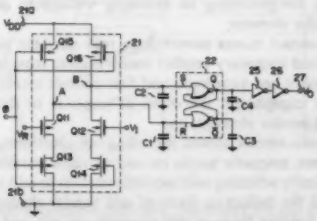
buffer means responsive to the intermediate signal for generating the reset signal.

4,461,964

VOLTAGE COMPARATOR USING CMOS TRANSISTORS

Yoshihisa Shiotari, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 2, 1982, Ser. No. 354,031
Claims priority, application Japan, Mar. 9, 1981, 56-33418
Int. Cl.³ H03K *5/153, 5/24*
U.S. Cl. 307—362 **6 Claims**



1. A voltage comparator comprising:

first and second power supply terminals across which a power supply voltage is applied;

first and second P channel MOS transistors each having source, drain and gate, said sources of said first and second transistors being connected to said first power supply terminal;

third and fourth N channel MOS transistors each having source, drain and gate, said sources of said third and fourth transistors being connected to said second power supply terminal;

fifth and sixth MOS transistors each having source, drain and gate, the source-drain path of said fifth transistor being connected between said drains of said first and third transistors, the source drain path of said sixth transistor being connected between said drains of said second and fourth transistors, and said fifth and sixth transistors having their gates connected to receive a reference voltage, and an input voltage to be compared with the reference voltage, respectively;

means for supplying a clock pulse to said gates of said first to fourth transistors; and

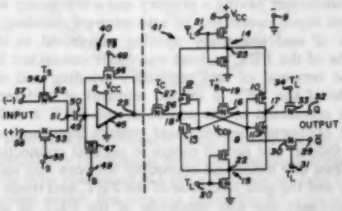
an RS flip-flop circuit having first and second inputs respectively connected to said drains of said fifth and sixth transistors.

4,461,965

HIGH SPEED CMOS SENSE AMPLIFIER

Sing W. Chin, Walnut Creek, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 18, 1980, Ser. No. 179,181
Int. Cl.³ H03K *5/24, 3/356*
U.S. Cl. 307—530 **6 Claims**



1. A CMOS sense amplifier comparator combination, said sense amplifier having an input terminal and first and second output terminals, comprising:

first and second supply terminals connectable to a source of operating voltage;

a pair of inverter gates cross coupled together in latching configuration so as to create a latch having first and second output nodes and a pair of supply terminals;

a pair of polarity switches coupled between said first and second supply terminals and said pair of latch supply terminals and operated in complementary fashion, with each one of said pair being coupled to one of said inverter gates supply terminals wherein two states of latch operations are available, with the first state producing normal latching operation and the second state rendering said inverter gates inoperative;

first switching device means coupled between said input terminal and one of said first and second output nodes;

second switching device means coupled between said first and second output nodes whereby, when said second switching device is turned on, said nodes are at the same potential and when said second switching device is turned off, said nodes can be at different potentials;

third switching device means coupled between said first output node and said first output terminal;

fourth switching device means coupled between said second output node and said second output terminal;

an inverting amplifier having an input and an output coupled to said sense amplifier input;

a coupling capacitor having one terminal coupled to the input of said amplifier; and

fifth and sixth switching means coupled to the other terminal of said capacitor and coupled separately to provide said comparator input terminals which are connectable to potential sources to be compared.

4,461,966

CIRCUIT FOR CONTROLLING AT LEAST ONE POWER-FET

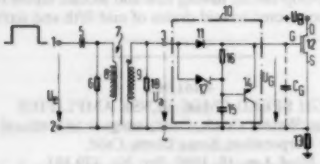
Ernst Hebenstreit, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 1, 1981, Ser. No. 326,433

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1980, 3045771; May 29, 1981, 3121508

Int. Cl.³ H03K *17/00, 17/56*

U.S. Cl. 307—571 **10 Claims**



1. Circuit for controlling at least one power-FET, comprising a transformer having a primary and a secondary winding, a control input connected to said primary winding, a first terminal of said secondary winding connected to the gate electrode of the FET, at least one diode connected between said first terminal of said secondary winding and the gate electrode of the FET, a second terminal of said secondary winding connected to the source of the FET, a differential member connected between said control input and said primary winding, and switch means in parallel connection with said at least one diode and connected between said secondary winding and the gate electrode of the FET, said diode operating to connect the gate electrode of the FET to said first terminal of said secondary winding in response to a given secondary signal of a first polarity, and said switch means operating to connect the gate electrode of the FET to the source electrode of the FET and bypassing said diode in response to a given secondary signal of a second polarity.

4,461,967

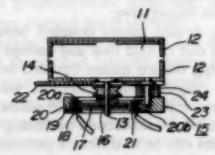
SUPPORT FOR A ROTATIONAL SPEED DETECTING MECHANISM ON A FLAT MOTOR

Kazuyasu Motoyama, Tokyo, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Feb. 24, 1982, Ser. No. 351,894

Int. Cl.³ H02K *11/00*

U.S. Cl. 310—268 **1 Claim**



1. A rotary machine comprising a rotary machine body, said rotary machine body comprising a flat coreless motor having a planar first side and an opposite planar second side, said motor including a rotatable shaft projecting from said first side of said motor, a disk shaped magnet tightly fitted coaxially onto said rotatable shaft a certain distance from said first side of said motor, a ring shaped coil unit generally coaxial with and spaced radially outwardly from the radially outer circumferential periphery of said disk shaped magnet so that said coil unit encircles the circumferential periphery of said disk shaped magnet for generating a frequency signal output corresponding to rotational speeds of said shaft, a ring shaped supporting member arranged to support the ring shaped coil unit coaxially around the disk shaped magnet wherein the disk shaped magnet is free to rotate relative to the coil unit so as to generate said frequency output, said supporting member having an annular flange extending radially inwardly between said coil unit and said first side, the radially inner edge of said flange being spaced radially outwardly from said rotatable shaft, an adapter plate mounted on said first side of said motor so that said adapter plate is spaced from said supporting member, means for detachably fastening said ring shaped supporting member to said first side of said motor so that the coil unit is supported in operative relation to the disk shaped magnet, and said detachable fastening means including means located between said adapter plate and said supporting member so that said supporting member is spaced in a given position from said adapter plate.

4,461,968

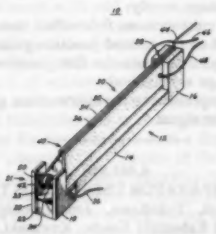
PIEZOELECTRIC RELAY WITH MAGNETIC DETENT

Eric A. Kolm, Brookline, and Henry H. Kolm, Wayland, both of Mass., assignors to Piezo Electric Products, Inc., Cambridge, Mass.

Filed Jan. 11, 1982, Ser. No. 338,228

Int. Cl.³ H01L *41/00*

U.S. Cl. 310—332 **12 Claims**



1. A magnetically detented piezoelectric relay comprising:

a piezoelectric bender element having a fixed portion and a movable portion;

means for providing an actuating voltage to deflect said bender element;

first contact means mounted on said movable portion and second stationary contact means remote from said bender element and proximate said first contact means for selective engagement therewith in response to deflection of said bender element; and

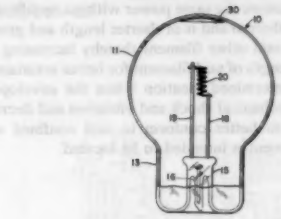
magnetic circuit means including an electromagnet, pole means, magnetic means on said movable portion for magnetically adhering said movable portion to said pole means until the deflection force of said bender element exceeds the holding force of said magnetic circuit, and means for varying the current to said electromagnet to control the voltage at which said bender element is actuated.

4,461,969

INCANDESCENT ELECTRIC LAMP WITH MEANS FOR REDUCING EFFECTS OF DEPOSITION OF FILAMENT MATERIAL

Peter Walsh, Stirling, N.J., assignor to Duro-Test Corporation, North Bergen, N.J.

Continuation of Ser. No. 959,459, Nov. 13, 1978, abandoned.
This application May 18, 1981, Ser. No. 264,473
Int. Cl.³ H01K 1/32
U.S. Cl. 313—113 19 Claims



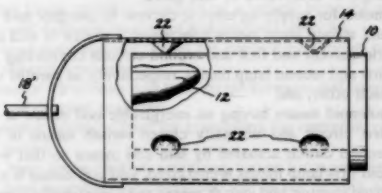
1. An incandescent electric lamp comprising:
an envelope of material which is transmissive to visible light,
incandescent filament means within said envelope,
means for supplying electrical energy to said filament means to cause it to incandesce to produce energy at least in the visible range, the incandescence of the filament means producing a heated gas stream and vaporizing material therefrom, the major portion of which vaporized filament material moves by convection in the heated gas stream in the direction of the flow of the heated gas stream to the wall of the envelope and deposits over a substantially predetermined area of the internal surface thereof in accordance with the orientation of the envelope relative to the direction of the flow of the heated gas stream, said predetermined area being a minor part of the overall surface area of said envelope,
and means on substantially only said predetermined area of the envelope on which the vaporized filament material deposits for maintaining high reflectivity for visible light energy incident on said area while said deposit of filament material builds thereon to reflect therefrom substantially all of the incident visible light energy directly to another part of the envelope which is transmissive to visible light.

4,461,970

SHIELDED HOLLOW CATHODE ELECTRODE FOR FLUORESCENT LAMP

John M. Anderson, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 25, 1981, Ser. No. 324,926
Int. Cl.³ H01J 1/20, 1/24
U.S. Cl. 313—240 12 Claims



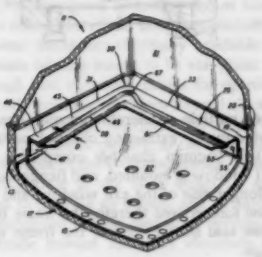
1. A hollow cathode electrode, especially for use in fluorescent lamps, comprising:
a first outer metal sleeve;
an inner metal sleeve disposed within said first outer sleeve and substantially coaxial therewith said first outer sleeve providing heat shielding and situated in contact with said inner sleeve for aiding in arc initiation; and
an emissive mix disposed on said inner sleeve.

4,461,971

STRENGTHENING MEANS FOR A CRT MULTI-OPENING MASK FRAMING MEMBER

Peter G. Puhak, Seneca Falls, N.Y., assignor to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Aug. 4, 1982, Ser. No. 405,131
Int. Cl.³ H01J 29/81
U.S. Cl. 313—407 12 Claims



1. A structural improvement in the metallic framing member of a substantially rectangular multi-opening mask-frame assembly of the type positioned in a color cathode ray tube in spaced relationship within the viewing panel thereof adjacent to the cathodoluminescent screen disposed thereon, said framing member being an integration of major dimensionally-related elements and minor dimensionally-related elements transitionally combined at corner regions to provide a continuous perimetrical mask supporting structure having X and Y axes of reference therethrough; said member evidencing a substantially L-shaped cross-sectional configuration having a formed ledge portion instanding from an integral outer edge-related perimetrical upstanding sidewall portion, said ledge portion evidencing an exterior surface and an interior surface from which said sidewall portion is in substantially perpendicular relationship; said ledge having a continuous inner edge defining the opening of said framing member; said sidewall having a terminal contoured surface whereupon the multi-opening member of said mask-frame assembly is subsequently positioned and affixed, said structural improvement being means for perimetrically strengthening said framing member and comprising:
a longitudinal channel-like indentation formed in the ledge portion of each of the major and minor related elements in a manner to extend toward the corner regions of said framing member, the ends of said respective major and minor related channel-like indentations being joined at the respective corner regions of said framing member by an "S"-like arcuate corner channel-like indentation so positioned to merge with the respective ends of said major and minor related channels to form a continuous channel-like indentation in each corner region.

4,461,972
CHARGED PARTICLE ACCELERATOR VACUUM CHAMBER

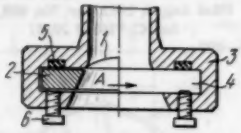
Stanislav P. Dmitriev, Michurinskaya ulitsa, 19, kv. 23; Anatoly K. Evseev, ulitsa Bukharestskaya, 33, korpus 1, kv. 23; Andrei S. Ivanov, ulitsa Kuznetsovskaya, 8, kv. 33; Leonid V. Komorin, poselok Metallostroi, ulitsa Pushkinskaya, 8, kv. 35; Vladimir I. Nikishkin, ulitsa Yaroslava Gasheka, 2, kv. 459; Stanislav N. Nuzhny, poselok Metallostroi, ulitsa Bogaichuka, 10, kv. 27, all of Leningrad; Mikhail K. Rex, ulitsa Kievskaya, 92, kv. 25, Simferopol; Mikhail P. Sviniin, poselok Metallostroi, ulitsa Bogaichuka, 4, kv. 25, and Mikhail T. Fedotov, poselok Metallostroi, ulitsa Polovaya, 22, kv. 58, both of Leningrad, all of U.S.S.R.

PCT No. PCT/SU80/00087, 371 Date Jan. 26, 1982, 102(e) Date Jan. 26, 1982, PCT Pub. No. WO81/03597, PCT Pub. Date Dec. 10, 1981

PCT Filed May 30, 1980, Ser. No. 346,051

Int. Cl.³ H01J *33/04*

U.S. Cl. 313—420 **4 Claims**



1. A charged particle accelerator vacuum chamber including an exit window for extracting charged particles into the atmosphere, said vacuum chamber comprising: a flange in which the exit window is mounted, said flange including guide slots along a longer side of the exit window, and a frame having at least one foil secured thereto, the frame being slidably movable within said slots to permit the frame to be remove from the flange.

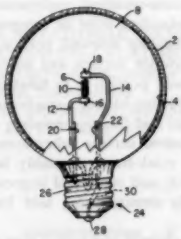
4,461,973
ENERGY-EFFICIENT INCANDESCENT LAMP WITH IMPROVED FILAMENT CHARACTERISTICS

Rudolph Kaufman, North Bergen, and Wolfgang E. Thouret, Verona, both of N.J., assignors to Duro-Test Corporation, North Bergen, N.J.

Filed Mar. 19, 1982, Ser. No. 359,743

Int. Cl.³ H01J *7/44, 17/34, 19/78, 29/96*

U.S. Cl. 315—56 **7 Claims**



1. An energy-efficient incandescent lamp with improved filament characteristics, comprising:

an envelope,

an incandescent filament mounted within said envelope for consuming power of a predetermined wattage and becoming incandescent to produce visible and infrared radiation;

means substantially surrounding said filament and having a coating thereon for transmitting a substantial portion of the visible radiation therethrough and out of the envelope and for reflecting a substantial portion of the infrared radiation back to a predetermined location of confined area within the envelope where the filament is intended to be located so that the infrared radiation will impinge upon said filament to raise its operating temperature; and

means for supplying power at said predetermined wattage to said filament including a diode connected in series with the filament for rectifying an applied AC voltage to cause the filament to consume power of said predetermined wattage at a current greater than that of another filament designed to consume the same power without rectification of AC applied thereto and is of shorter length and greater thickness than said other filament thereby increasing the mechanical strength of said filament for better maintaining it at said predetermined location when the envelope is subjected to mechanical shock and vibration and decreasing its length to better conform to said confined area where said filament is intended to be located.

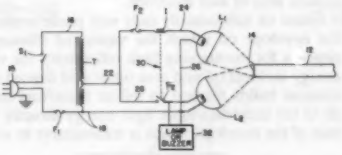
4,461,974
DUAL LIGHT SOURCE

David Chiu, 50-47 207th St., Bayside, N.Y. 11364

Filed Jun. 9, 1982, Ser. No. 386,736

Int. Cl.³ H05B *39/10*

U.S. Cl. 315—65 **5 Claims**



1. Apparatus for illuminating a light guide system comprising:

a. a light guide having a single entrance transverse to the axis thereof for receiving a beam of light;

b. first and second lamp means having filements, each lamp means disposed off the axis of said light guide to direct its beam of light at an angle into said entrance within the angle of acceptance of said guide;

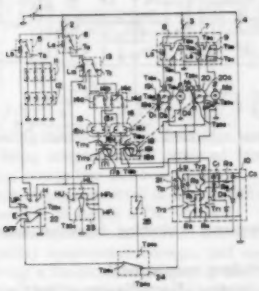
c. means for supplying electric current to energize said first and second lamp means comprising a source of said electric current and first and second circuits connecting said first and second lamp means, respectively, in parallel with each other; and

d. solenoid means having an energizable coil means in said first circuit and normally closed switch means in said second circuit actuated by said coil means so that when said first lamp means is energized, said coil means is energized causing said switch means to be electrically open so that said second lamp means remains unenergized, whereby failure of said first lamp means resulting in an open in said first circuit will cause said coil means to be deenergized and said switch means to close, thereby causing energization of said second lamp means and the continuation of light directed into said light guide entrance.

4,461,975
CONCEALED TYPE HEAD LAMP DEVICE

Hichiro Osaki, and Kazumi Hayashi, both of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Oct. 23, 1981, Ser. No. 314,411
Claims priority, application Japan, Oct. 27, 1980, 55-150428; Oct. 27, 1980, 55-150429; Oct. 27, 1980, 55-150430; Oct. 27, 1980, 55-153145[U]
Int. Cl.³ B60Q 1/02
U.S. Cl. 315—82 9 Claims



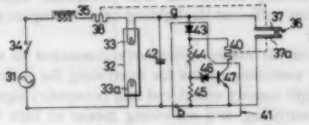
1. A concealed type head lamp device comprising:
head lamps movably disposed on a vehicle body for movement between concealed and exposed positions;
a head lamp lighting circuit for controlling turning on and off said head lamps;
a motor for driving said head lamps between said concealed and exposed positions;
a motor driving circuit for controlling the operation of said motor; and
a single lighting switch, for operating said head lamp lighting circuit and said motor driving circuit, said single lighting switch being selectively switchable to any one of a first operating position where said head lamps are turned off and brought to and maintained in said concealed position, a second operating position where said head lamps are turned off and brought to and maintained in said exposed position, and a third operating position where said head lamps are turned on and brought to and maintained in said exposed position.

9. A concealed head type lamp device comprising:
head lamps movably disposed on a vehicle body for movement between concealed and exposed positions;
a head lamp lighting circuit for controlling turning on and off said head lamps;
a motor for driving said head lamps between said concealed and exposed positions;
a motor driving circuit for controlling the operation of said motor;
at least single manual switching means for operating said head lamp lighting circuit and said motor driving circuit; and
a temperature sensitive switch provided in parallel with said manual switching means and closed to actuate said motor driving circuit when the ambient temperature around a vehicle becomes lower than a preset level so that the head lamps are brought to said exposed position while said head lamps are turned off.

4,461,976
DISCHARGE LAMP STARTER

Minoru Yamamoto, Neyagawa; Koichiro Tanigawa, Katano; Kazunori Kubo, Moriguchi, and Masazumi Takakura, Shijonawate, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sep. 29, 1982, Ser. No. 428,208
Claims priority, application Japan, Dec. 29, 1981, 56-214452
Int. Cl.³ H05B 41/06
U.S. Cl. 315—100 5 Claims

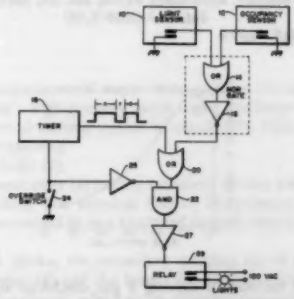


1. A discharge lamp starting device comprising an alternating current source for energizing a discharge lamp, a current limiting means connected to a circuit on the side of said source with respect to said lamp and including at least an inductive element, a normally closed switching means connected to a circuit on the other side of the lamp and including main and auxiliary bimetal electrodes thermally bendable in the same direction, a main heating means to be energized by a current flowing through said switching means for opening said main bimetal electrode from said auxiliary bimetal electrode; a holding heating means to be energized by a current flowing through a circuit element parallel to the switching means for holding an open state of the switching means, means for detecting non-lighting state of the lamp under an application of source current to provide an output, and an auxiliary heating means to be energized by said output for driving the auxiliary bimetal electrode toward the main electrode to close the switching means.

4,461,977
SINGLE ZONE LIGHTING CONTROLLER

William Pierpoint, Camarillo, and Dan M. Weeks, Ventura, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 1, 1982, Ser. No. 445,877
Int. Cl.³ H05B 37/02
U.S. Cl. 315—159 7 Claims



1. A system for controlling lighting in a predetermined zone illuminated by natural light and/or artificial light and controlled by both lighting and occupancy paterns, together with a local override function, comprising:
a. electronic switching means connected to one or more lighting devices in said predetermined zone;

b. a light sensing means, in said predetermined zone, connected to said electronic switching means;

c. an occupancy signal means, in said predetermined zone, connected to said electronic switching means;

d. said electronic switching means being operative to automatically switch on said lighting devices only when both said light sensing means indicates insufficient light in said predetermined zone and said occupancy signal means indicates occupancy of said predetermined zone; said electronic switching means being automatically operative to switch off said lighting devices when at least one of said light sensing means and said occupancy signal means indicates sufficient daylighting or no occupancy, respectively;

e. an override means operatively connected to said electronic switching means for overriding the indications of said light sensing means and said occupancy signal means for controlling said switching means to turn OFF the lighting devices in said zone and also to turn ON the lighting devices in said zone for a fixed period of time;

f. said override means, when operating to override and turn ON said lighting devices for a fixed time period, also operating to provide a signal to occupants in said predetermined zone when the fixed time period is about to end prior to switching OFF said lighting devices and reverting to automatic switching by said electronic switching means in response to said light sensing means and said occupancy signal means.

4,461,978

METHOD OF DRIVING GAS DISCHARGE LIGHT-EMITTING DEVICES

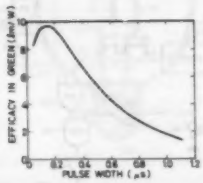
Shigeo Mikoshiba, Nishitama; Shinichi Shinada, Kokubunji, and Shoji Shirai, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 15, 1982, Ser. No. 398,706

Claims priority, application Japan, Jul. 29, 1981, 56-117775

Int. Cl.³ G09F 9/00

U.S. Cl. 315—169.4 **10 Claims**



1. In a method of driving a gas discharge light-emitting device consisting of at least a pair of electrodes, a gas charged around said electrodes and an air-tight container for holding said gas, the improvement wherein power is applied to said gas discharge light-emitting device through said electrodes so as to cause discharge, and the application of said power is terminated approximately when the ratio of radiation output of said discharge to the charged power starts decreasing.

4,461,979

LOW-DRIVE POWER SWITCHING TRANSISTOR CONTROL CIRCUIT

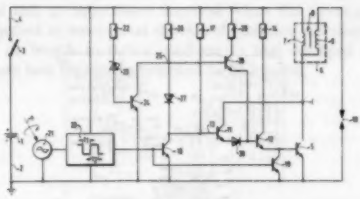
Edmund Jeenicke, Schwieberdingen, and Immanuel Krauter, Erbstetten, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 19, 1982, Ser. No. 379,634

Claims priority, application Fed. Rep. of Germany, May 23, 1981, 3120695

Int. Cl.³ H05B 37/02

U.S. Cl. 315—209 T **4 Claims**



1. Low-drive-power switching transistor control circuit having

an output switching transistor (5);

a connecting junction (J) serially connecting the emitter-collector path of the switching transistor (5) to a load (6);

a pair of supply terminals (2,4) supplying electrical power to the series circuit formed by the load (6), said junction (J) and the emitter-collector path of the switching transistor (5);

a first drive transistor (11);

means (13,17,18,20,21) connected to the base of the driver transistor (11) for controlling conduction of the driver transistor (11) and for supplying a control voltage thereto; and

a coupling circuit (12,14) connected from the output of the driver transistor (11) to the base of the switching transistor (5),

wherein, in accordance with the invention,

the emitter-collector path of the driver transistor (11) is connected to said junction between the load and the switching transistor (5);

a control transistor (19) of the same conductivity type as the switching transistor (5) is connected with its emitter-collector path in parallel with the base-emitter path of the switching transistor, said emitter-collector path being rendered conductive when the emitter-collector path of the switching transistor (5) enters the blocked state;

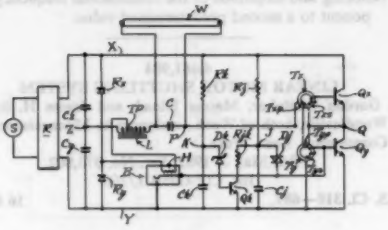
said coupling circuit includes a second driver transistor (12) having its emitter connected to the base of the switching transistor (5), its collector connected to a terminal of said load (6) remote from the switching transistor (5) and its base connected to the emitter of said said first driver transistor (11); and

said driver transistor (11), the switching transistor (5) and the means for controlling the driver transistor (11) are so matched that the voltage at said junction (J) when the switching transistor (5) is in saturated conduction condition, is less than the control voltage applied to the driver transistor (11) to provide for maintaining the switching transistor (5) in the conductive state, for the period of time until the charge carriers at the base of the switching transistor (5) are recombined, independently of driving power supplied by said driver transistor, thus reducing loading on said driver transistor (11).

4,461,980
PROTECTION CIRCUIT FOR SERIES RESONANT ELECTRONIC BALLASTS

Ole K. Nilssen, Caesar Dr., Rte. 5, Barrington, Ill. 60010

Filed Aug. 25, 1982, Ser. No. 411,263
Int. Cl.³ H05B 41/29
U.S. Cl. 315—225 9 Claims



1. A ballasting means for a gas discharge lamp, said ballasting means being adapted to be powered from an ordinary electric utility power line and comprising:

rectification means connected in circuit with said power line and operative to supply a DC voltage;

inverter means operative to convert said DC voltage into a substantially squarewave voltage, said squarewave voltage having a fundamental frequency and being provided across a pair of squarewave output terminals;

an L-C circuit comprising an inductor and a capacitor effectively connected in series with one another, said L-C circuit being resonant at or near said fundmental frequency and connected across said pair of squarewave output terminals;

connect means operative to permit connection of said lamp in parallel circuit with said capacitor;

voltage limiting means operative, whenever said lamp is not effectively connected in parallel with said capacitor, to limit the voltage developed across said capacitor to a magnitude lower than that dictated by the L-C circuit's Q-multiplication effect, but yet high enough to provide for effective lamp starting, said magnitude never-the-less being of a level high enough to represent a serious electric shock hazard to humans; and

safety means operative, whenever said voltage limiting means has been limiting the voltage developed across said capacitor for but a relatively brief period, to disable said inverter means, thereby to reduce the magnitude of the voltage developed across said capacitor to a level that is not high enough to represent a serious electric shock hazard to humans.

4,461,981
LOW PRESSURE INERT GAS DISCHARGE DEVICE

Takeo Saikatsu; Yoshinori Anzai; Toshiro Kajiwara; Goroku Kobayashi, and Shunichi Morimoto, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

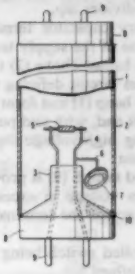
Filed Dec. 20, 1982, Ser. No. 451,230
Claims priority, application Japan, Dec. 26, 1981, 56-212479; Jan. 11, 1982, 57-2476; Jan. 11, 1982, 57-2477; Mar. 30, 1982, 57-51845
Int. Cl.³ H01J 61/16; H05B 41/24
U.S. Cl. 315—246 21 Claims

1. A low pressure inert gas discharge device, comprising:

(a) a lamp having a sealed bulb containing inert gas primarily composed of neon at a pressure ranging from 1.5 to 15 Torr, and an electrode structure contained in the bulb, and

(b) means for supplying said lamp with electrical power at a frequency of not less than 5 kHz, wherein the peak value Iop (A) of the electrical current and the pressure P (Torr) of the sealed inert gas satisfy the following formulae:

when $1.5 \leqq P \leqq 8$, $Iop \geqq 7/P^{1.1}$,



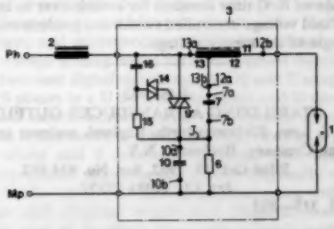
and

when $8 < P \leqq 15$, $Iop \geqq 69/P^{2.2}$.

4,461,982
HIGH-PRESSURE METAL VAPOR DISCHARGE LAMP IGNITER CIRCUIT SYSTEM

Hans-Jürgen Fähnrich, Munich, Fed. Rep. of Germany, assignor to Patent-Treuhand Gesellschaft für elektrische Gluhlampen mbH, Munich, Fed. Rep. of Germany

Filed Feb. 18, 1982, Ser. No. 350,046
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1981, 3108547
Int. Cl.³ H05B 37/00
U.S. Cl. 315—290 8 Claims



1. High-pressure metal vapor lamp ignition circuit system for starting of a high-pressure metal vapor discharge lamp (1) having electrical current supply terminals (Ph, Mp), said circuit system including

a ballast choke (2);

a pulse transformer (4) having a primary (8) and a secondary (5) winding, one terminal (5a) of the primary winding being connected to one electrical current supply terminal (Ph);

the ballast choke, the secondary winding (5) of the pulse transformer (4) and the lamp (1) being connected in the first series circuit, which series circuit is connected across said supply terminals (Ph, Mp);

a pulse capacitor (7) having first and second capacitor terminals (7a, 7b), the first capacitor terminal (7a) being connected to one terminal (8a) of the primary winding (8) of the pulse transformer (4) and to the terminal of the choke (2) remote from its connection to the current supply terminal;

and an auxiliary capacitor (10) having first and second auxiliary capacitor terminals (10*a*, 10*b*),

wherein the second capacitor terminal (7*b*) and the first auxiliary capacitor terminal (10*a*) are connected at a common junction (J) to form a capacitative series circuit defining a voltage divider in which said common junction forms a voltage divider tap,

the second auxiliary capacitor terminal (10*b*) being connected to that one of the supply terminals (Mp) which is remote from the ballast choke (2) to thereby connect the capacitative series circuit defining the voltage divider in shunt, across the lamp (1) and form with said choke (2) an oscillatory circuit and, with said pulse transformer (4), an igniter or starting high-voltage superposition circuit for said lamp; wherein

a voltage controlled switch (9) is provided, which becomes conductive when voltage in excess of a predetermined value is applied across the terminals of the voltage controlled switch,

said voltage controlled switch being connected in a series starting circuit defined by:

the primary (8) of the pulse transformer—the terminals of the switch—said common junction (J) and hence to the tap of said capacitative voltage divider—the pulse capacitor (7); wherein

a resistor (6) is provided, connected across the auxiliary capacitor (10) to provide for charging of the pulse capacitor (7)

while the voltage controlled switch (9) is initially non-conductive, through said resistor (6) and, upon conduction of the voltage controlled switch when the voltage across the pulse capacitor (7) reaches said predetermined value, providing a lamp ignition pulse through the pulse transformer (4, 11) and maintain oscillations in the oscillatory circuit formed by the choke (2) and the auxiliary capacitor (10) and the conductive switch (9) to provide additional energy for the firing pulse;

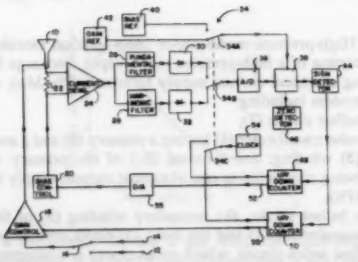
and wherein the respective values of the resistor (6) and the capacitor (7) and the predetermined value of conduction of said voltage controlled switch (9) are selected to provide an R/C time constant for switch-over to conduction of said voltage controlled switch at a predetermined phase angle of the supply voltage.

4,461,983

STABILIZING A TRANSDUCER OUTPUT

Roger T. Lees, Rickmansworth, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 15, 1982, Ser. No. 434,692
Int. Cl.³ H01J *29/52*
U.S. Cl. 315—383 **4 Claims**



1. A method of stabilizing an output delivered by a transducer, the output being proportional to an approximately integral power of an input signal provided to the transducer and thereby having a harmonic component that is the same integral multiple of the frequency of the fundamental component, said method comprising the steps of:

applying a sine-wave input signal to the transducer;

determining the amplitude of the integral harmonic component contained in the transducer output;

restoring said amplitude of the integral harmonic component to a first predetermined value;

determining the amplitude of the fundamental frequency component contained in the transducer output; and

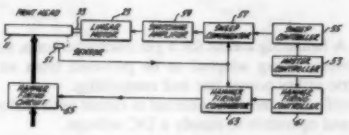
restoring said amplitude of the fundamental frequency component to a second predetermined value.

4,461,984

LINEAR MOTOR SHUTTLING SYSTEM

C. Gordon Whitaker, Mercer Island, and James H. Safford, Woodinville, both of Wash., assignors to Mannesmann Tally Corporation, Kent, Wash.

Filed May 3, 1982, Ser. No. 373,802
Int. Cl.³ G05B *11/00*
U.S. Cl. 318—687 **16 Claims**



1. A linear motor shuttling system suitable for rapidly shuttling a carriage over a short distance, said linear motor shuttling system comprising:

(A) first flexure means for supporting a carriage for rectilinear movement along and axis;

(B) a linear motor, said linear motor including a housing having magnetic means for producing a magnetic field and a coil positioned so as to produce a magnetic field that interacts with the magnetic field produced by said magnetic means when a current flows through said coil, said interaction causing said coil to move in one direction or the other along a linear axis depending upon the polarity and magnitude of current flow through said coil;

(C) second flexure means for supporting said housing of said linear motor such that said linear axis along which said coil moves lies in substantial alignment with the axis along which said carriage is supported for rectilinear movement by said first flexure means;

(D) coupling means for coupling said coil of said linear motor to said carriage such that said movement of said coil in one direction or the other along said linear axis causes said rectilinear movement of said carriage along said axis;

(E) power supply means for supplying power to the coil of said linear motor; and,

(F) control means connected to said power supply means and the coil of said linear motor for controlling the polarity and magnitude of current flow through said coil, and, thus, the shuttling frequency of said rectilinear carriage movement, said control means including:

(1) position sensing means for continuously sensing the position of said carriage and producing an actual position signal related thereto;

(2) command signal generating means for continuously producing commanded position signals;

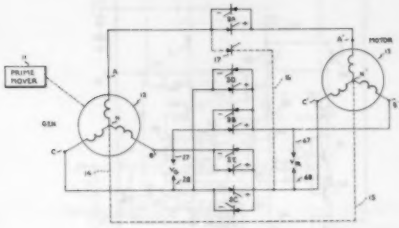
(3) comparison means for comparing said actual position signals with said commanded position signals and producing error signals related to the difference therebetween; and,

(4) current flow control means connected to receive said error signals and control the polarity and magnitude of the current flow through said coil so as to reduce said error signals.

4,461,985
SPEED REDUCING CONTROL SYSTEM FOR A POLYPHASE ELECTRIC MOTOR

Thomas D. Stitt, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Oct. 11, 1983, Ser. No. 540,727
Int. Cl.³ H07P 5/40
U.S. Cl. 318—727 15 Claims



1. A "cycle-skipping" speed control system for a variable speed polyphase a-c electric motor comprising:

a. a 3-phase source of alternating voltage having a fundamental frequency of "f" Hertz;

b. at least three output terminals respectively adapted to be connected to different phases of said motor;

c. interconnecting means including at least first, second and third controllable bidirectional switches respectively connected between said output terminals and different phases of said source, each of said switches having a non-conducting state, a positive conducting state in which motor current flows through the switch in one direction, and a negative conducting state in which motor current flows through the switch in the opposite direction;

d. means coupled to said source for providing a train of timing pulses having a frequency that varies with f;

e. means for providing a speed command signal indicative of whether full motor speed or a fraction ("1"/N)oof full motor speed is desired, where N is a predetermined integer; and

f. control means responsive to said speed command signal for cyclically producing, in synchronism with said timing pulses, a family of periodic firing signals that are effective selectively to initiate the conducting states of said switches, said family comprising six firing signals that respectively commence in a predetermined sequence at approximately (1/6f) intervals when full speed is desired, and said contol means being arranged, when a predetermined fraction of full speed is desired:

(1) to predetermine for each desired speed a particular combination and pattern of three different pairs of firing signals per family,

(2) to establish a series of recurrent periods synchronized with said timing pulses, each period having a duration of approximately (N/f),

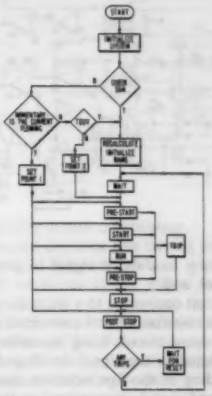
(3) to preselect for each desired speed three separate portions of each of said periods during which firing signals can be produced, with only one pair of firing signals being permitted during any one of the preselected portions, and

(4) to produce in turn, during succeeding preselected portions of each period, the predetermined pairs of firing signals, whereby each firing signal in said family is produced at a frequency of (f/N) Hertz.

4,461,986
MOTOR CONTROL APPARATUS WITH PHASE RELATED DETECTOR

Pamela M. Maynard, Wilkinsburg, and George T. Mallick, Jr., Penn Hills, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 20, 1983, Ser. No. 486,751
Int. Cl.³ H02P 1/24
U.S. Cl. 318—778 5 Claims



1. AC motor control apparatus, comprising:

contactor means for being actuated to start an AC motor in response to the occurrence of a predetermined event;

microprocessor control means interconnected with said contactor means for actuating said contactor means to start said motor; and

voltage sensing means interconnected with the input lines of said AC motor for providing a two state digital signal related to whether a positive half cycle of voltage is being sensed or a negative half cycle of voltage is being sensed for U samples in one full cycle of voltage for S phases of voltages, said microprocessor being interconnected with said voltage sensing means for having stored therein all of said two state digital signals sampled in said U samples for said S phases in a U by S matrix where said U dimension on said matrix increases with the expected increase of phases in a situation in which no phase reversal is present and where said S dimension increases with time, said microprocessor sampling said matrix diagonally starting with the lowest S by U location and increasing with S and U for each diagonal where each diagonal contains U values until all locations have been sampled, said motor start operation being aborted if any one diagonal does not have all two state digital signals therein of the same value.

4,461,987
CURRENT SENSING CIRCUIT FOR MOTOR CONTROLS

Donald E. Fulton, Stoneham; William P. Curtiss, Winthrop, and William T. Fejes, Jr., Needham, all of Mass., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Sep. 8, 1982, Ser. No. 416,356
Int. Cl.³ H02P 5/40
U.S. Cl. 318—800 6 Claims

1. A current sensing circuit for indicating the magnitude of a current which comprises:

a sensing resistor connected to generate a voltage which is indicative of the magnitude of the current to be sensed;

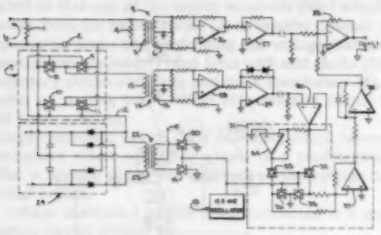
an impedance network connected across the sensing resistor and including a capacitor connected in series with a primary winding of a first isolation transformer;

a modulator connected to the capacitor to produce a high

frequency signal having its amplitude modulated by a voltage developed across the capacitor;

a second isolation transformer having a primary winding connected to the modulator and having a secondary winding;

a demodulator connected to the secondary winding of the second isolation transformer and being operable to reproduce the voltage appearing across the capacitor from the



high frequency modulated signal to provide a low frequency signal; and

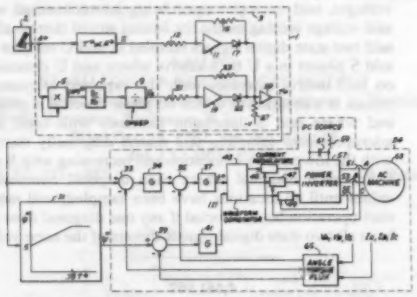
a summing circuit connected to a secondary winding on the first isolation transformer and connected to the demodulator, the summing circuit being operable to add the low frequency signal to the signal developed across the secondary winding of the first isolation transformer to provide a summed signal proportional to the voltage developed across the sensing resistor.

4,461,988

APPARATUS FOR CONTROLLING AN ELECTRICAL VEHICLE DRIVE SYSTEM

Alan B. Plunkett, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 6, 1981, Ser. No. 251,603
Int. Cl.³ H02P 5/28
U.S. Cl. 318—802 **5 Claims**



1. An electric vehicle drive system responsive to accelerator pedal position comprising:

means for generating a torque command having means for generating a constant torque signal proportional to accelerator pedal position, means for generating a torque signal varying with vehicle speed to maintain constant horsepower and dependent on accelerator pedal position, and means for comparing said signals and selecting the smaller as the torque command, Whereby the transition between constant torque command and torque command producing constant horsepower occurs at lower speeds with decreasing pedal position; and

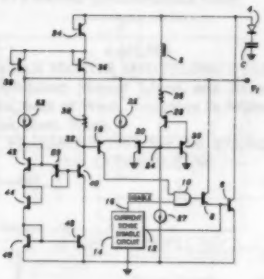
a traction motor control system responsive to said torque command.

4,461,989

VOLTAGE SENSE CIRCUIT FOR A BUBBLE MEMORY VOLTAGE BOOSTER

Robert N. Dotson, Mesa; Robert B. Davies, and Ira Miller, both of Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 27, 1982, Ser. No. 412,069
Int. Cl.³ G05F 1/10, 3/20
U.S. Cl. 323—222 **13 Claims**



1. An apparatus for sensing when the voltage at a node falls to a predetermined value, comprising:

comparator means having a first input coupled to said node and having a second input;

a first supply voltage conductor;

reference voltage generating means coupled to the second input of said comparator means and to said first supply voltage conductor for establishing a reference voltage at said second input;

a second supply voltage conductor;

current mirror means coupled to said node and to said first and second supply voltage conductors for receiving a first current and for generating a second current; and

transistor means including at least one transistor coupled between said node and said current mirror means for acting as a BV_{ceo} level shifter when the voltage at said node exceeds the breakdown voltage of said at least one transistor where BV_{ceo} is the collector-emitter breakdown voltage with an open base.

4,461,990

PHASE CONTROL CIRCUIT FOR LOW VOLTAGE LOAD

Milton D. Bloomer, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 1, 1982, Ser. No. 432,000
Int. Cl.³ G05F 1/445
U.S. Cl. 323—235 **13 Claims**

1. A circuit for energizing a lower-voltage load from a higher-voltage A.C. source, comprising:

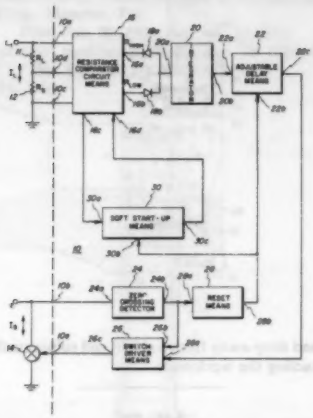
switching means, in series connection with said load across said source, for conducting a flow of current through said load;

means for monitoring the actual magnitude of the resistance of said load and for providing a signal having a characteristic varying responsive to the difference between said actual load resistance magnitude and a desired load resistance magnitude;

reset means for causing said switching means to cease load current conduction at each of a plurality of periodic zero crossings of the waveform of said source; and

delay means for causing said switching means to commence

load current conduction at a time, after each source waveform zero crossing, adjustably responsive to said varying

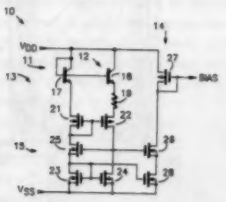


signal characteristic and serving to maintain said load resistance at said desired magnitude.

4,461,991
CURRENT SOURCE CIRCUIT HAVING REDUCED ERROR

Michael D. Smith, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 28, 1983, Ser. No. 470,039
Int. Cl.³ G05F *3/20*
U.S. Cl. 323—312 **14 Claims**



1. A current source circuit having reduced error, comprising:

reference voltage means having a diode-connected device, for providing a reference voltage proportional to a bias current;

reference current means coupled to the reference voltage means, for providing a reference current proportional to the reference voltage;

unity gain amplifier means having a predetermined output impedance coupled to both said reference voltage and said reference current means, for providing a bias voltage proportional to said reference current;

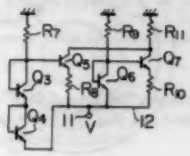
bias current means coupled to said unity gain amplifier means, for providing an output bias current proportional to said bias voltage; and

buffer means coupled to both said unity gain amplifier means and said bias current means, for substantially increasing the output impedance of said unity gain amplifier thereby decreasing power supply variation dependency.

4,461,992
TEMPERATURE-COMPENSATED CURRENT SOURCE CIRCUIT AND A REFERENCE VOLTAGE GENERATING CIRCUIT USING THE SAME

Kunihiko Yamaguchi, Sayama, and Noriyuki Homma, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 12, 1982, Ser. No. 367,676
Claims priority, application Japan, Apr. 15, 1981, 56-55552
Int. Cl.³ G05F *3/20*
U.S. Cl. 323—313 **8 Claims**



1. A current source circuit comprising:

a first and a second common line having an external power source connected therebetween;

a load element connected at one end to said first common line;

a first and a second transistor connected at the collector to the other end of said load element, and at the emitter to said second common line respectively through a first and a second current restricting resistor;

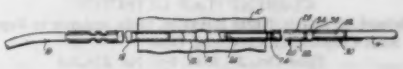
first bias means including a first base resistor connected between said first common line and the base of said first transistor, and first voltage-drop means connected between the base of said first transistor and said second common line, said first voltage-drop means generating a forward voltage-drop across a single PN junction caused by a current supplied through the first base resistor; and

second bias means including a second base resistor connected between said first common line and the base of said second transistor, and second voltage-drop means connected between the base of said second transistor and said second common line, said second voltage-drop means generating a forward voltage drop across a plurality of PN junctions caused by a current supplied through the second base resistor.

4,461,993
LOW RESISTANCE ELECTRICAL SPRING PROBE

Gordon L. Glau, West Covina, Calif., assignor to Everett/-Charles, Inc., Fontana, Calif.

Filed Sep. 21, 1981, Ser. No. 303,895
Int. Cl.³ G01R *1/06, 31/02*; H01H *1/06*
U.S. Cl. 324—158 P **8 Claims**



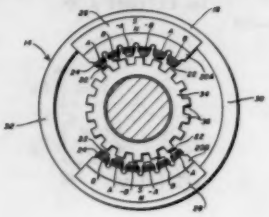
1. A spring contact electrical probe comprising a tubular member, a plunger movable inside the tubular member and having a contact portion extending out of the open end of the tubular member, a compression coil spring inside the tubular member having one end engaging the head of the plunger and the other end engaging the tubular member, the spring urging the plunger head toward said opening, stop means limiting the outward movement of the plunger by the spring, and a synethetic grease applied to the spring for entrapping any particulate matter abraded from the tubular member by contact with the spring, said synthetic grease including a synthetic oil base and a lithium hydroxy stearate mixed in the oil base.

4,461,994

PERMANENT MAGNET INDUCTOR TACHOMETER

Daniel J. MacDonald, Brookfield, Wis., assignor to Litton Industrial Products, Inc., Beverly Hills, Calif.

Filed Mar. 19, 1982, Ser. No. 359,701
Int. Cl.[3] G01P 3/48; H02K 17/42
U.S. Cl. 324—174 12 Claims



1. In a mechanical apparatus having an output shaft supported by an output bearing for driving belted loads, the improvement in combination therewith of a tachometer located inboard of the output bearing for maintaining the belted load capacity of the apparatus and adapted to provide an electric signal indicative of the rotary speed of the output shaft, the tachometer comprising:

(a) a rotor mounted inboard of said bearing on said shaft for rotation therewith and having a plurality of projections protruding along the rotor periphery; and

(b) a stator assembly mounted inboard of said bearing and having:

(i) a plurality of opposed stator segments, each having stator teeth,

(ii) windings on said stator teeth for providing the electric speed signal,

(iii) flux establishing means for establishing magnetic flux in said stator segments, and

(iv) flux return path means connecting said stator segments exterior of said rotor for providing a magnetic flux return path between said stator segments in the stator;

wherein said rotor projections and said stator teeth form a plurality of flux transmission paths whose magnetic flux varies in response to rotation of said shaft; and

wherein said flux return path means receives substantially all the flux from said flux transmission paths so that the total machine flux in said return path is substantially constant.

4,461,995

COOLING METHOD AND APPARATUS FOR EDDY CURRENT FLAW DETECTION

Richard M. Harris, North Royalton, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

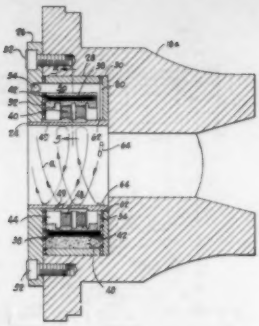
Filed Oct. 29, 1981, Ser. No. 316,316
Int. Cl.[3] G01R 33/12; G01N 27/90
U.S. Cl. 324—224 22 Claims

1. Apparatus for testing a hot metallic workpiece movable along a path, said apparatus comprising:

(a) a tubular shield having an inner surface surrounding the path and defining a passageway through which the workpiece can pass without contacting the shield said inner surface being exposed to face a workpiece as it traverses the passageway;

(b) a detection unit mounted outside the shield for testing the workpiece as it passes through the shield passageway, and

(c) structure including apertures defined in the shield for communication to a source of liquid coolant for flowing a liquid onto said inner surface of the shield at a direction oriented with respect to said surface for causing the fluid to flow across the inner surface of the shield and to flow



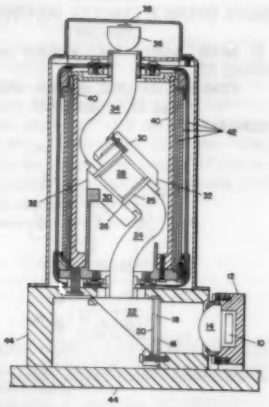
off and drop away from a shield end substantially without contacting the workpiece.

4,461,996

NUCLEAR MAGNETIC RESONANCE CELL HAVING IMPROVED TEMPERATURE SENSITIVITY AND METHOD FOR MANUFACTURING SAME

Tae M. Kwon, Thousand Oaks, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Aug. 6, 1982, Ser. No. 405,807
Int. Cl.[3] G01R 33/08
U.S. Cl. 324—315 17 Claims



1. A method for reducing the temperature sensitivity of a cell used within an NMR magnetic alignment device, comprising the steps of:

introducing into said cell a mixture of gases including at least two isotopes of at least one magnetic moment gas wherein at least one isotope has a nuclear quadrupole moment;

varying the temperature of said cell to a predetermined series of temperature values;

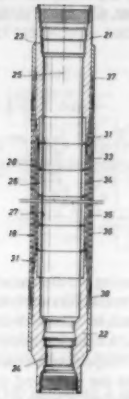
measuring the change of the bias of said cell with temperature at each of said series of predetermined temperature values to determine the established temperature at which said change of said bias with temperature of said cell reaches its minimum rate of change; and

maintaining said cell at nearly said established temperature of minimum rate of change during operation of said magnetic alignment device.

4,461,997
NON-CONDUCTIVE LOGGING SONDE HOUSING

Hervé Ohmer, Antony, France, assignor to Schlumberger Technology Corp., Houston, Tex.

Filed Feb. 20, 1981, Ser. No. 236,163
Claims priority, application France, Feb. 29, 1980, 80 04535
Int. Cl.³ G01V 3/18; H05K 5/00
U.S. Cl. 324—338 9 Claims



1. Sonde housing for logging apparatus, adapted to receive transducers for the acquisition of measurements in boreholes, comprising:

(a) end pieces

(b) a stack of ceramic rings arranged coaxially between said end pieces to form a hollow cylinder resistant to borehole pressure, said hollow cylinder defining an inner space for receiving the transducers,

(c) a layer of reinforced plastic material placed coaxially of, and outside the stack of rings and fixed to the end pieces to resist longitudinal forces applied to the end pieces, and elastic seals received in peripheral grooves formed in the ceramic rings at the interface of each pair of adjacent rings, the longitudinal dimension of each seal at rest being larger than that of the respective groove, said seals being kept under compression by said layer of elastic material, whereby, during surface manipulations of the housing, direct contact between the end faces of the successive rings is prevented and an axial compression force is applied to said rings and when the housing is subjected to borehole pressure, the seals can be compressed to a point where the end faces of adjacent ceramic rings contact each other.

4,461,998
ION SELECTIVE MEASUREMENTS

John A. R. Kater, 2037 W. San Lorenzo, Santa Ana, Calif. 92704

Filed Oct. 2, 1981, Ser. No. 307,750
Int. Cl.³ G01N 27/56
U.S. Cl. 324—438 23 Claims

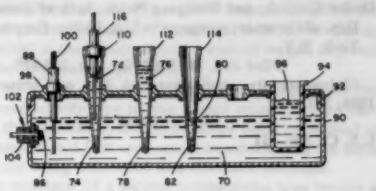
11. In combination:

an ion selective electrode having an ion selective element;

a reference electrode;

a first standard solution container having a salt bridge extending through its wall:

a sample solution container having a salt bridge extending through its wall; and

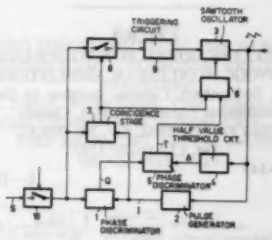


holding means for holding said ion selective element and said reference electrode and said salt bridges in intimate contact with a body of electrolyte.

4,461,999
CIRCUIT FOR PRODUCING A PERIODIC SAWTOOTH SHAPED SIGNAL

Gerrit Wolf, and Godefridus H. Haenen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 4, 1981, Ser. No. 299,450
Claims priority, application Netherlands, Sep. 8, 1980, 8005054
Int. Cl.³ H03L 7/00; H03K 4/08; H04N 5/04
U.S. Cl. 328—181 11 Claims



1. A circuit for producing a periodic sawtooth shaped signal having a trace and a retrace comprising;

a source of a synchronizing pulses having a substantially constant repetition frequency,

an oscillator which is directly synchronizable by said synchronzing pulses, the natural frequency of said oscillator in the absence of synchronizing pulses being approximately equal to said repetition frequency,

a transmission switch for applying said synchronizing pulses to said oscillator,

a frequency correction circuit connected to said oscillator,

a phase comparison stage coupled to the output of said oscillator and to said source of synchronizing pulses for determining the phase difference between the sawtooth signal produced by said oscillator and the synchronizing pulses and for blocking the transmission switch to prevent synchronizing pulses from being applied to said oscillator and for rendering said frequency correcting circuit operative to change the frequency of said oscillator at a phase difference which exceeds a predetermined value,

said phase comparison stage rendering the frequency correction circuit inoperative and the transmission switch conductive to enable it to apply synchronizing pulses to the oscillator when the phase difference is less than said predetermined value.

4,462,000

AMPLIFIER COMPRISING MEANS FOR ELIMINATING DIRECT VOLTAGE TRANSIENTS ON THE AMPLIFIER OUTPUT

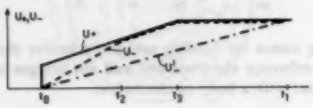
Detlef Gottlieb, and Wolfgang Nolde, both of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 11, 1982, Ser. No. 338,715

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1981, 3113824

Int. Cl.³ H03F 3/04

U.S. Cl. 330—51 19 Claims



1. An amplifier capable of eliminating direct voltage transients at the amplifier output when the amplifier power supply is switched on comprising, a voltage source coupled to a point in the amplifier such that the amplifier output direct voltage gradually increases to a steady-state value during the turn-on period, characterized in that the voltage source conducts current in one direction only, means for applying a control voltage which varies continuously during the turn-on period to a control input of the voltage source thereby to control the magnitude of the output voltage of the voltage source, and means connecting the voltage source to the amplifier such that the voltage source is cut off by a potential change produced as the amplifier output voltage increases.

4,462,001

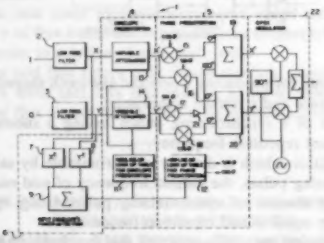
BASEBAND LINEARIZER FOR WIDEBAND, HIGH POWER, NONLINEAR AMPLIFIERS

Henri Girard, St-Lambert, Canada, assignor to Canadian Patents & Development Limited, Ottawa, Canada

Filed Feb. 22, 1982, Ser. No. 350,827

Int. Cl.³ H03F 1/32

U.S. Cl. 330—149 4 Claims



1. A baseband linearizer for a high power amplifier in a modulation transmission system wherein in-phase X and quadrature phase Y components of a baseband signal are filtered through low pass filters, comprising:

first means for receiving the filtered in-phase X and quadrature phase Y components of the baseband signal and attenuating the amplitudes of the baseband signal X, Y components as a function of the high power amplifier transfer characteristics;

second means for receiving the attenuated baseband signal X', Y' components and rotating the phase angle of the attenuated baseband signal X', Y' components as a function of the high power amplifier transfer characteristic, and

means for detecting the power level of the filtered in-phase X and quadrature phase Y components of the baseband signal for controlling the first means and the second means.

4,462,002

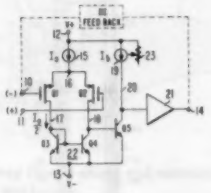
TRIMMING CIRCUITS FOR PRECISION AMPLIFIER

Otto H. Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 24, 1982, Ser. No. 381,733

Int. Cl.³ H03F 3/45

U.S. Cl. 330—253 14 Claims



1. In an amplifier having a differential input stage including first and second input transistors each having respective control, and respective output electrodes and having common electrodes connected to a common node for receiving constant operating current, the respective output electrodes being respectively connected to the input and output connection of a CMA, said amplifier having a further gain stage including a further transistor having a control electrode connected to said output connection of the CMA, a common electrode coupled to a common electrode of said CMA and having a constant current source connected as a load to its output connection, wherein said amplifier is susceptible of input offset voltages between the respective control electrodes of said first and second transistors, said amplifier including apparatus for nulling said offset voltage comprising:

means for adjusting the amplitude of the constant current source connected as a load to the output electrode of said further transistor.

4,462,003

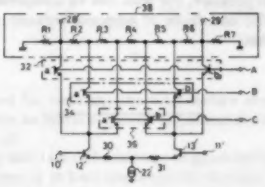
VARIABLE GAIN AMPLIFIER

Hajime Takamatsu, Tokyo, Japan, assignor to Sony/Tektronix, Tokyo, Japan

Filed Jan. 10, 1983, Ser. No. 456,674

Int. Cl.³ H03G 3/10

U.S. Cl. 330—254 8 Claims



1. A variable gain amplifier, comprising:

an input stage transistor for amplifying an input signal;

a resistive network including a plurality of resistors connected in series between potential sources;

a plurality of switching transistors for supplying the collector current of said input stage transistor to each node of said resistive network; and

control means for selectively enabling either one of said switching transistors;

wherein an output signal of predetermined different gains is

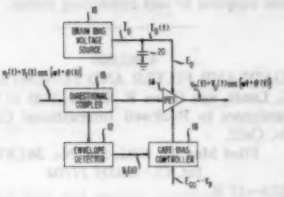
derived from at least one of the resistors of said resistive network.

4,462,004

DYNAMIC CLASS-4 FET AMPLIFIER

Donald C. Cox, Tinton Falls, and Adel A. M. Saleh, Holmdel, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 18, 1982, Ser. No. 359,220
Int. Cl.³ H03F *3/16*; H03G *3/10*
U.S. Cl. 330—277 **4 Claims**



1. A field-effect-transistor (FET) amplifier circuit responsive to a time-varying input signal ($v_i(t)$) for operating in a linear, class A mode and producing as an output an amplified time-varying output signal ($v_o(t)$), wherein said FET amplifier circuit comprises

an FET amplifier (**14**) including a source input terminal, a drain input terminal, a gate input terminal, and an output terminal for receiving an input signal at said source input terminal and producing an amplified version thereof at said output terminal;

a drain bias voltage source (**18**) for producing as an output a drain bias voltage signal (E_D) which is coupled to said drain input terminal of said FET amplifier;

a capacitor (**20**) disposed between the output of said drain bias voltage source and a ground plane for removing time variations in a current from said drain bias voltage source;

envelope detecting means (**12**) responsive to said time-varying input signal for producing as an output an envelope signal ($V_i(t)$) related to said time-varying input signal; and

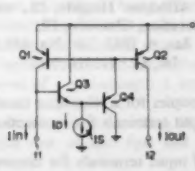
a gate bias voltage source (**16**) responsive to both a predetermined constant gate voltage (E_{Go}) and said envelope signal produced by said envelope detecting means for producing as an output a gate control signal ($E_G(t)$) equal to the sum thereof, said gate control signal subsequently coupled to said gate input terminal of said FET amplifier.

4,462,005

CURRENT MIRROR CIRCUIT

Hiromi Kusakabe, and Yoshihiro Yoshida, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 11, 1982, Ser. No. 387,750
Claims priority, application Japan, Jun. 15, 1981, 56-91992
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—288 **3 Claims**



1. A current mirror circuit comprising:

a first transistor of a first conductivity type having a first emitter, a first base and a first collector, the first emitter and first collector being connected to a power supply and a current input terminal, respectively;

a second transistor of the first conductivity type having a second emitter, a second base and a second collector, the second emitter, second collector and second base being connected to the power supply, a current output terminal and the first base, respectively;

voltage level shift means including a third transistor of the first conductivity type having a third emitter, a third base and a third collector, the third emitter being connected to the bases of said first and second transistors and the third collector being connected to a reference potential;

a fourth transistor of a second conductivity type having a fourth emitter, a fourth base and a fourth collector, the fourth collector, the fourth emitter and the fourth base being connected to the power supply, the third base and the first collector, respectively;

a current source connected between the reference potential and the third base; and

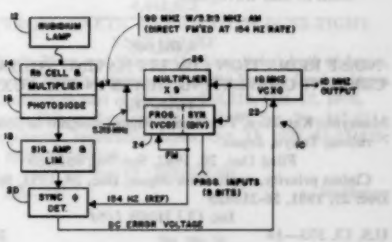
a resistor connected between the emitter of said fourth transistor and the base of said third transistor.

4,462,006

METHOD FOR STABILIZING THE RESONANCE FREQUENCY OF A RUBIDIUM FREQUENCY STANDARD

William R. Fowks, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 20, 1981, Ser. No. 284,920
Int. Cl.³ H03L *7/26*
U.S. Cl. 331—3 **11 Claims**



1. A method of improving the stability of the resonance frequency of a rubidium frequency standard with variations in temperature, said frequency standard having a rubidium lamp generating a rubidium-87 lightbeam for optically pumping a rubidium vapor cell, the method comprising the steps of:

passing said lightbeam through a device for controlling the intensity of the light;

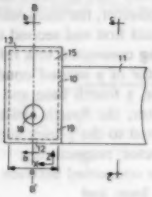
adjusting the intensity of said lightbeam with said device until the sensitivity of said resonance frequency to changes in cell temperature and light intensity is minimized by locating the point at which the change in frequency versus temperature curves for various light intensities intersect at the location at which each change in frequency versus temperature curve is minimum, and

operating said cell at said point.

4,462,007
OUTPUT COUPLING CIRCUIT FOR A CAVITY OSCILLATOR

Tadao Shirai, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,876
Claims priority, application Japan, Mar. 5, 1980, 55-27542
Int. Cl.³ H03B 7/14, 9/14
U.S. Cl. 331—96 3 Claims

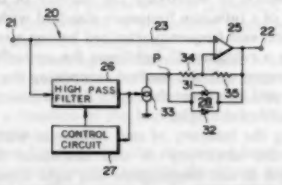


1. An oscillator comprising:
a cavity resonator having a rectangular cavity comprising a lower wall, an upper wall, a first, a second, a third, and a fourth side wall;
an oscillator element means for generating an oscillating signal, said oscillator element means being mounted in said cavity resonator on the side of said lower wall at a position which is offset from the center line between said upper and lower walls of said cavity;
a biasing means for energizing said oscillator element means;
a waveguide fixed to said first side wall of said cavity resonator for delivering the signal generated by the oscillator element means, said waveguide having a lower wall, an upper wall, and two side walls, the lower wall of said waveguide and said lower wall of said cavity being positioned in the same plane; and
a signal coupling aperture in said first side wall of said cavity resonator for transmitting said signal generated by said oscillator element means from said resonator to said waveguide, said signal coupling aperture being located on the side of said upper wall of said cavity at a position which is offset from said center line of said cavity and which is offset from the center line between said upper and lower walls of said waveguide.

4,462,008
NOISE REDUCTION CIRCUIT HAVING VOLTAGE TO CURRENT CONVERTING MEANS IN THE AUXILIARY CHANNEL

Masayuki Katakura, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 20, 1982, Ser. No. 451,453
Claims priority, application Japan, Dec. 29, 1981, 56-214824; Dec. 29, 1981, 56-214825
Int. Cl.³ H04B 1/64
U.S. Cl. 333—14 20 Claims

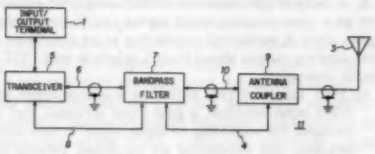


1. In a noise reduction circuit comprising combining means for generating a combined signal in response to signals supplied thereto, main channel means for supplying an information signal substantially unchanged to said combining means, and auxiliary channel means for receiving said information signal and for supplying a modified information signal to said combining means for combining with said unchanged information signal, said auxiliary channel means including:
high pass filter means with a variable cut-off frequency for generating a filtered output signal in response to said information signal supplied thereto;
voltage-current converting means for converting the voltage level of said filtered output signal to a current and for supplying said current to said combining means; and
amplitude limiting means for limiting the amplitude of said current supplied to said combining means.

4,462,009
BROADBAND FILTER AND TUNING SYSTEM

Harvey L. Landt, and Glenn R. Snider, both of Cedar Rapids, Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 25, 1982, Ser. No. 381,671
Int. Cl.³ H03H 11/04
U.S. Cl. 333—17 R 13 Claims



1. A broadband filter and tuning system for filtering signals between a signal source and a load, the broadband filter and tuning system comprising:
tunable bandpass filter means having an input terminal and an output terminal for passing signals centered around a selectable frequency, the tunable bandpass filter means being located between the signal source and the load;
substitute load;
transfer relay means for reversing the connection of the tunable bandpass filter means by connecting the output terminal of the tunable bandpass filter means to the signal source and the input terminal of the tunable bandpass filter means to the substitute load in response to a first control signal and for reconnecting the input terminal of the tunable bandpass filter means to the signal source and the output terminal of the tunable bandpass filter means to the load in response to a second control signal; and
logic control means for generating the first and second control signals and for adjusting the selectable frequency when the connection of the tunable bandpass filter means is reversed.

4,462,010
UHF/VHF SPLITTER-BALUN ASSEMBLY

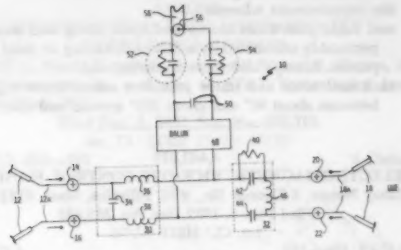
Peter Strammello, Arlington Heights, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Jan. 6, 1983, Ser. No. 456,125
Int. Cl.³ H03H 7/46
U.S. Cl. 333—126 5 Claims

1. An antenna coupler for a television receiver comprising:
a first pair of input terminals for connection to a VHF antenna;
a second pair of input terminals for connection to a UHF antenna;
a low pass filter coupled to said first pair of input terminals and tuned to a frequency below the UHF band;
a high pass filter coupled to said second pair of input terminals;

a single output terminal for coupling by means of a coaxial cable to said television receiver;

isolation means coupled to said single output terminal for isolating voltages present in said television receiver, said isolation means including first and second capristors coupled to said single output terminal and a capacitor coupled



across said first and second capristors for reducing the insertion loss of said antenna coupler; and

impedance transformation means coupling said low and high pass filters to said first and second capristors of said isolation means for providing an impedance match between said VHF and UHF antennas and said coaxial cable.

4,462,011

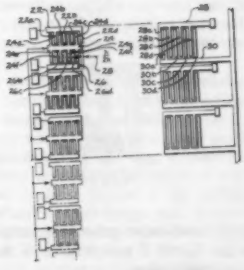
LOW DRIFT RELATIVE PHASE SENSOR EMPLOYING SURFACE ACOUSTIC WAVES

Robert B. Ward, Mt. View, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Dec. 27, 1982, Ser. No. 453,277

Int. Cl.³ H03H *9/145, 9/76, 9/66*

U.S. Cl. 333—154 **4 Claims**



1. A sensor for sensing the delay difference between first and second signals having substantially identical wave forms comprising a piezoelectric body having a surface,

a row of n first and second input transducer pairs disposed on said surface in a first direction,

said pairs of input transducers being offset from one another by offset distances each bearing a relationship of $\lambda/16$

means for coupling said first and second signals to said first and second input transducers, respectively, so that parallel acoustic waves of a wavelength λ are produced on the active region of said surface,

said surface acoustic waves traveling in a second direction normal to the row of said first and second transducer pairs,

a row of output transducers disposed on said surface substantially parallel to said first and second transducer pairs so that the amplitude of the signal produced at each output transducer by interference between input signals from said first and second transducers of the corresponding pair represents a discrete delay difference between said first and second signals coupled to said input transducers.

4,462,012

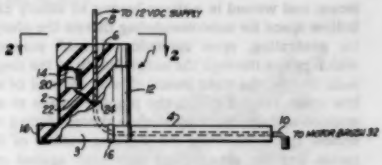
COMBINATION LOW INDUCTANCE FUSE AND ELECTROMAGNETIC NOISE FILTER

George L. Kerber, and William D. Squire, both of San Diego, Calif., assignors to GTI Corporation, San Diego, Calif.

Filed Jun. 15, 1981, Ser. No. 273,798

Int. Cl.³ H03H *7/01*

U.S. Cl. 333—167 **1 Claim**



1. A filter for blocking electromagnetic noise signals which are generated in an electrical or electromechanical device from an electrical system of which it is a part, said filter comprising

an electrical conductor for connecting the electrical or electromechanical device to the remainder of the system,

a ceramic chip capacitor, a first electrically conductive flexible ribbon connected to said electrical conductor and one side of said chip capacitor,

a second electrically conductive flexible ribbon electrically connected to the other side of said chip capacitor and extending away therefrom,

a solid molded plastic housing encapsulating portions of the electrical conductor including the location where the first flexible ribbon is connected thereto, the chip capacitor and portion of the second ribbon, such that a portion of the second ribbon extends out of the housing for contacting a source of reference potential, whereby the plastic housing and flexible ribbons absorb mechanical forces without transmitting them to the chip capacitor.

4,462,013

ELECTROMAGNETIC DEVICE WITH DUST-TIGHT ENCLOSURE

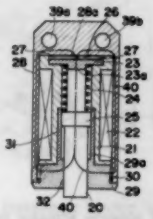
Hiroshi Ueda, Nara, and Shigeru Oyokota, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 950,518, Oct. 11, 1978, abandoned. This application Apr. 15, 1980, Ser. No. 141,611

Claims priority, application Japan, Oct. 13, 1977, 52-121839; Aug. 25, 1978, 53-104246

Int. Cl.³ H01F *7/08*

U.S. Cl. 335—229 **30 Claims**



1. An electromagnetic device comprising yoke means made of a magnetic material and having a working surface;

a plunger made of a magnetic material and having a working surface at its one end, the plunger being movable in an axial direction thereof between first and second positions

where the working surface of the plunger is in and out of engagement with the working surface of the yoke means respectively, a permanent magnet magnetically connected between portions of said yoke means, the yoke means and the plunger and the permanent magnet constituting a single closed magnetic circuit passing through the working surface when the plunger is at the first position, the permanent magnet being disposed in the magnetic circuit for generating magnetic flux which passes through the magnetic circuit in a direction for providing a magnetic force of attraction for arresting the plunger at the first position; and

an excitation coil at least partially surrounded by the yoke means and wound in a shape having an axially extending hollow space for accommodating therein the plunger, and for generating, upon excitation thereof, magnetic flux which passes through the entire length of the single magnetic circuit, the yoke means closing the end of said hollow space toward which the plunger moves to said first position and the working surface thereof facing into said hollow space, whereby the working surface of the yoke means and the plunger are protected against magnetic powder from outside the device adhering to the working surface of the yoke means and the plunger;

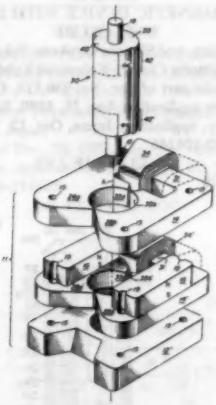
said permanent magnet being made of an intermetallic compound given by the formula RCo_5 where R is a member selected from the group consisting of Y and at least one of the rare earth elements, the excitation coil when excited having a polarity for causing the magnetic flux generated by the excitation coil substantially to cancel the flux generated by the permanent magnet at the working surface to thereby reduce the magnetic force of attraction, the permanent magnet having a relatively short distance between its opposite poles for facilitating passage of the magnet flux generated by the excitation coil.

4,462,014

WIDE-ANGLE ACTUATOR

Jean I. Montagu, Brookline, Mass., assignor to General Scanning Inc., Watertown, Mass.

Filed Jul. 28, 1982, Ser. No. 402,432
Int. Cl.³ H01F 7/14
U.S. Cl. 335—230 **13 Claims**



1. In a limited rotation actuator comprising a permeable rotor assembly positioned to rotate relative to a stator assembly,

said stator assembly having a pair of pole pieces, each pole piece defining a pair of permeably connected stator pole faces arranged around the axis of said rotor assembly, said rotor assembly defining a pair of permeably connected rotor pole faces, each rotor pole face being arranged to cooperate with associated stator pole faces, and

a permanent magnet means for imposing a bias flux through said pole pieces and said rotor assembly via associated sets of rotor and stator pole faces, said pole pieces being permeably connected to respectively opposite pole faces of said permanent magnet means,

the improvement wherein

said rotor pole faces are spaced apart along said axis and permeably connected by a flux path having an axial component through said rotor assembly, and,

each said rotor and stator pole face subtends an angle of between about 90° and about 180° around said axis,

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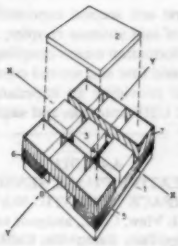
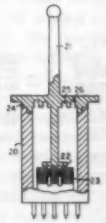
4,462,015

ELECTROMAGNETIC PICK-OFF CONTROL HANDLE

Yishay Netzer, 5 Kenmar Dr., #18, Billerica, Mass. 01821

Filed Feb. 4, 1982, Ser. No. 345,685
Int. Cl.³ H01F 21/06
U.S. Cl. 336—135 **4 Claims**





1. A joystick mechanism generating output signals corresponding to the X and Y components of manual command, comprising, in combination;

a handle controllable by an operator and rotatable in X and Y axes,

a housing with a top plate, wherein said top plate includes means supporting said handle,

a transducer for sensing the displacement of said handle relative to said housing, said transducer comprising a ferromagnetic vane member attached to the bottom side of said handle and a stator member attached to the bottom side of said housing, said stator member including a ferromagnetic core comprising nine parallel legs extending from a common base disposed in a 3 by 3 rectangular array wherein the edges of said array are parallel to said X and Y axes; at least one electrically excited primary winding wound around the leg at the center of said array; a first secondary winding wound around three legs along a first side of said array parallel to the X-axis; a second secondary winding wound around three legs along a second side of said array parallel to the X-axis; a third secondary winding wound around a third side of said array parallel to the Y-axis; and a fourth secondary winding wound

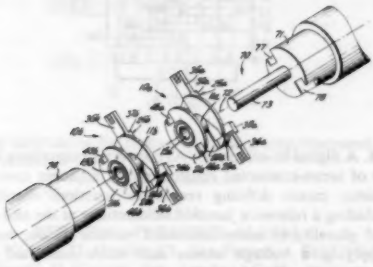
around a fourth side of said array parallel to the Y-axis; wherein said first and second secondary windings define an X-axis and said third and fourth secondary windings define a Y-axis; said secondary windings being inductively coupled to said primary windings and generating voltages depending on the position of said vane member.

4,462,016

INDUCTOR COILS WITH MECHANICALLY COUPLEABLE BOBBINS

Randall J. Bland; Ronald W. Butler, and Samuel F. Horton, all of Shreveport, La., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Dec. 3, 1982, Ser. No. 446,310
Int. Cl.³ H01F *15/10, 27/30*
U.S. Cl. 336—192 **6 Claims**



1. An indicator coil comprising:

(a) a bobbin of insulating material including as integral parts thereof; (i) a tubular barrel having a central axis and a substantially circular cylindrical bore extending axially therethrough, and (ii) first and second end flanges disposed around said bore at axially opposite ends of said barrel and extending radially outward therefrom;

(b) at least two lugs axially projecting outward of said first flange and spaced thereon angularly from each other and radially from said axis;

(c) at least two elongated arms each coupled at one end with a respective one of said lugs at an intermediate point in the axial length thereof such that said lugs have tips projecting axially outward of said arms, said arms being supported as cantilevers by said lugs to extend radially outward therefrom beyond the periphery of said first flange;

(d) at least two recesses formed in the radially extending outer face of said second flange, said recesses having the same angular spacing from each other and radially spacing from said axis as characterizes said lugs, and said recesses being shaped to receive therein the tips of similar lugs of a similar inductor coil disposed coaxially adjacent the coil described hereby;

(e) at least one winding of insulated wire on said barrel; and

(f) at least two terminal means providing respective terminal regions disposed on said arms radially outward of said first flange and adapted to electrically couple said winding to external circuitry.

4,462,017

HIGH VOLTAGE AIR CORE REACTOR

Harold M. Knapp, and Bernard A. Tremblay, both of Pittsfield, Mass., assignors to General Electric Company, King of Prussia, Pa.

Filed Aug. 23, 1982, Ser. No. 410,224
Int. Cl.³ H01F *27/30*
U.S. Cl. 336—207 **7 Claims**

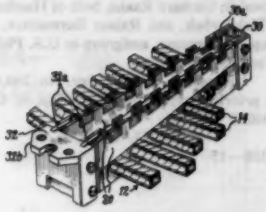
1. An electrical power reactor comprising, in combination:

A. a disk winding arranged in a plurality of vertically spaced, multi-turn layers; and

B. an annular array of angularly spaced columns supporting said disk winding layers, each said column including

(1) a monolithic casting of an insulative material in which portions of the layer turns are imbedded; and

(2) a pair of radially extending, angularly spaced casting forms positioned between each winding layer and formed of a rigid plastic material, said form pairs establishing the vertical spacing between said winding layers and the radial spacing between layer turns, each said form pair cooperating with vertically adjacent form pairs to provide the sidewalls of a casting mold for said column and remaining in place to constitute permanent exterior sidewalls for said column, each said casting form includes:



a. an elongated body dimensioned to establish the desired vertical spacing between said winding layers,

b. a plurality of vertically extending fingers integrally formed with said body in spaced relation along the upper edge thereof, said fingers defining recesses therebetween for receipt of individual layer turns and being dimensioned to establish the radial spacing between said layer turns, and

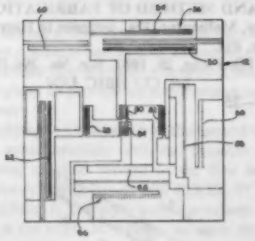
c. means integrally formed with said body along the lower edge thereof for overlapping engagement with said fingers of a vertically adjacent casting mold in providing a casting mold sidewall.

4,462,018

SEMICONDUCTOR STRAIN GAUGE WITH INTEGRAL COMPENSATION RESISTORS

Maurice Yang, Costa Mesa, and Carlyle A. Mounteer, Irvine, both of Calif., assignors to Gulton Industries, Inc., Costa Mesa, Calif.

Filed Nov. 5, 1982, Ser. No. 439,282
Int. Cl.³ G01L *1/22*; G01B *7/20*
U.S. Cl. 338—3 **10 Claims**



1. A semiconductor transducer having integral compensation resistors, comprising:

a silicon substrate having a first and second surface;

a silicon dioxide layer disposed on said first surface of said silicon substrate;

at least one chromium nitride temperature compensation resistor formed on said silicon dioxide layer;

a plurality of platinum alloy resistors formed on said silicon dioxide layer;

a plurality of gold conductive lines disposed over said silicon dioxide layer interconnecting said resistors;

whereby the electrical characteristics of said transducer when subjected to temperature variations may be adjusted as desired by varying the resistance of said compensation resistor.

4,462,019

PHOTOSENSITIVE SEMICONDUCTOR RESISTOR

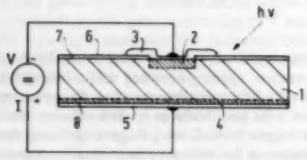
Helmut Ewaldt; Gerhard Raabe, both of Hamburg; Heinz Sauermann, Halstenbek, and Rainer Burmeister, Hamburg, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 1, 1982, Ser. No. 344,688

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1981, 3104075

Int. Cl.³ H01L *31/08*

U.S. Cl. 338—15 8 Claims



1. A photosensitive semiconductor resistor having a monocrystalline semiconductor body of one conductivity type, which on two oppositely-located surfaces is provided with an anode contact and with a cathode contact, is characterized in that the cathode contact is a highly doped surface zone in the semiconductor body and of the same conductivity type as the semiconductor body, and that the area of the anode contact is at least 1000 times larger than the area of the cathode contact, said cathode contact contacting the semiconductor body at the surface to be exposed to photon radiation.

4,462,020

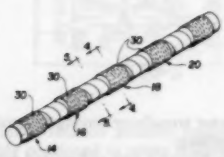
MINIATURE RESISTIVE TEMPERATURE DETECTOR AND METHOD OF FABRICATION

E. Glenn May, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Aug. 25, 1981, Ser. No. 296,191

Int. Cl.³ H01C *3/04*

U.S. Cl. 338—25 16 Claims



1. A resistive temperature detector comprising a coated cylindrical graphite form, a wire wound about said form and a ceramic cement covering said wire.

4,462,021

DIGITAL-TO-ANALOG CONVERTER THAT COMPENSATES FOR INTEGRATED CIRCUIT RESISTOR VARIATIONS

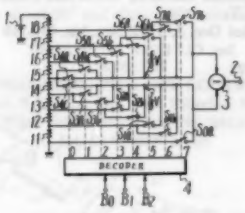
Kazuo Watanabe, Hadano, and Masaru Sugita, Minamiashigara, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 10, 1982, Ser. No. 347,551

Claims priority, application Japan, Feb. 13, 1981, 56-19800

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 DA 16 Claims



1. A digital-to-analog (D/A) converter comprising a plurality of series-connected resistor means, adjacent ones of said resistor means defining respective junctions therebetween including a reference junction substantially at the mid-point of said plurality of series-connected resistor means; means for supplying a voltage across said series-connected resistor means; a plurality of switch means arranged as a first set coupled to said junctions at one side of said reference junction and as a second set coupled to said junctions at the other side of said reference junction and selectively operable to couple a potential produced at a respective junction; combining means having one input coupled in common to said first set of said switch means to receive the potential coupled thereto when a switch means included in said first set is operated and having another input coupled in common to said second set of said switch means to receive the potential coupled thereto when a switch means included in said second set is operated for combining one of said coupled potentials with the other to produce an analog output signal representing said two coupled potentials; and switch control means responsive to a multi-bit digital signal for operating predetermined switch means in both said first and second sets and thereby coupled to said combining means said potentials produced at corresponding junctions disposed on either side of said reference junction in accordance with said digital signal.

4,462,022

SECURITY SYSTEM WITH RADIO FREQUENCY COUPLED REMOTE SENSORS

Larry G. Stolarczyk, Raton, N. Mex., assignor to A. R. F. Products, Inc., Raton, N. Mex.

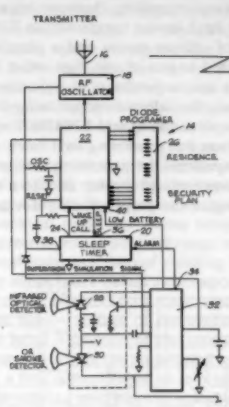
Filed Nov. 12, 1981, Ser. No. 320,556

Int. Cl.³ G08B *29/00*

U.S. Cl. 340—506 5 Claims

1. A supervised wireless security system comprising a sensor including a radio frequency transmitter adapted to be located at an area to be secured, and a control unit located at a distance from the sensor including a radio frequency receiver, characterized by the improved construction wherein the sensor includes repetitive means for actuating the radio frequency transmitter after the lapse of a first period of time, the duration of said first period of time varying randomly, said means of exciting the radio frequency transmitter deactuating the transmitter after the lapse of a second period of time short compared to the first period of time, and the control unit includes a random access memory coupled to the receiver for receiving and storing signals from the transmitter, said control unit also including

means for sampling the memory at intervals to determine the existence of a response to a signal from the transmitter, the



sampling intervals of the control unit being long compared to the first period of time.

4,462,023

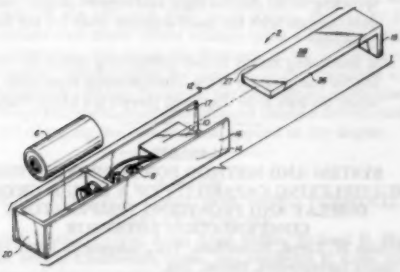
PERSONAL PROPERTY ALARM

Chris E. Nielsen, 22 Almaden Ct., San Francisco, Calif. 94118, and Donald D. Conard, San Anselmo, Calif., assignors to Chris E. Nielsen, San Francisco, Calif.

Filed Jan. 18, 1982, Ser. No. 339,918

Int. Cl.³ G08B *13/02*

U.S. Cl. 340—571 **4 Claims**



1. A theft protection system for use in combination with a movable article to be protected, the system comprising:

a position-sensitive alarm comprising:

a housing;

a battery having first and second terminals;

a battery enclosure, mounted within said housing, having one open side for removably mounting said battery therein;

a movement-sensitive switch means mounted within said housing and having input and output terminals electrically connected only when said switch means is displaced at least a predetermined amount from a neutral condition, said input terminal electrically connected to said first terminal;

buzzer means for producing an audible alarm signal mounted within said housing and electrically connected between said second terminal and said output terminal; and

said housing including an elongate channel shaped case sized for housing said battery enclosure therein at one end and an L-shaped cover means for enclosing said switch and buzzer means within a volume defined by the other end of said case, an end of said battery enclosure and said L-shaped cover means; and

means for mounting said alarm to said article so that said switch is normally open when said article is in a chosen position.

4,462,024

MEMORY SCANNING ADDRESS GENERATOR

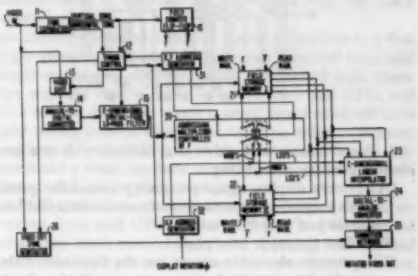
Christopher H. Strolle, Philadelphia, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 24, 1981, Ser. No. 305,173

Claims priority, application United Kingdom, Mar. 24, 1981, 8109253

Int. Cl.³ G09G *1/16*

U.S. Cl. 340—727 **12 Claims**



1. Apparatus for generating points of a phantom raster scan in u and v orthogonal Cartesian coordinates in synchronism with the generation of at least a portion of a raster scan in x and y orthogonal Cartesian coordinates, responsive to a gated PIXEL-SCAN-RATE CLOCK supplying pulses describing pixel-by-pixel scanning at relatively fast rate in the x direction and to a multiphase LINE-SCAN-RATE CLOCK describing line scanning at relatively slow rate in the y direction, said LINE SCAN RATE CLOCK having in each period between the gated intervals of PIXEL-SCAN-RATE CLOCK a respective pulse associated with each of its phases, the number of phases in said LINE-SCAN-RATE CLOCK between each successive pair of gated intervals of PIXEL-SCAN-RATE CLOCK exceeding the number of fields in each frame of raster scan by at least one, said apparatus comprising:

a first register for storing v coordinates of phantom raster scan clocked by pulses from said gated PIXEL-SCAN-RATE CLOCK and from said LINE-SCAN-RATE CLOCK;

a first adder having a first input to which the output of said first register connects and having an output connected to the input of said first register, whereby it combines with said first register to provide an accumulator, and having a second input;

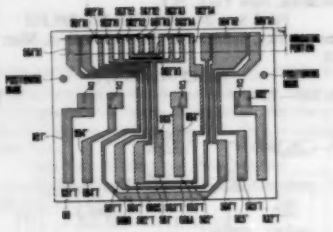
means for applying $-(A/k) \sin \phi$ to the second input of said first adder simultaneously with the contents of said first register being clocked toward to the first input of said adder responsive to pulses of said PIXEL-SCAN-RATE CLOCK, where A and k are positive-valued scaling factors and ϕ is the angle of rotation between the x, y and u, v coordinate systems; and

means for applying A cos ϕ to the second input of said first adder simultaneously with the contents of said first register being clocked forward to the first input of said first adder responsive to pulses respectively associated with a number of the phases of said LINE-SCAN-RATE CLOCK equalling the number of fields in each frame of the raster scan.

4,462,025
INDICATION DEVICE FOR CAMERA

Hiroyasu Murakami, Tokyo; Takashi Uchiyama, Kanagawa; Ryoichi Suzuki, Kanagawa; Masaharu Kawamura, Kanagawa; Shinji Sakai, Tokyo, and Kikuo Momiyama, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Sep. 8, 1980, Ser. No. 185,159
Claims priority, application Japan, Sep. 6, 1979, 54-114420
Int. Cl.[3] G09G 3/36
U.S. Cl. 340—753 5 Claims



1. For a camera, a liquid crystal indication device having a display portion, comprising:

(A) camera display signal producing means for producing display signals representative of camera data and having a plurality of output terminals;

(B) a first electrode base plate;

(C) common electrode means on the first electrode base plate for forming the display portion to display the display signals from said display signal producing means, the common electrode means having a plurality of electrodes;

(D) a second electrode base plate;

(E) segment electrode means along a side of the second electrode base plate for forming said display portion to display the display signals from said display signal producing means, the segment electrode means including a plurality of electrodes, a plurality of said electrodes being related electrodes;

(F) short circuit means for mutually connecting said related electrodes of the segment electrode means in such a manner that said display signal is applied simultaneously to the related electrodes of the segment electrode means the short circuit means being located on a portion of the second electrode base plate;

(G) first connecting means connected between said display signal producing means and said common electrode means for transmitting the display signals to the common electrode means; and

(H) second connecting means for transmitting the display signal from said display signal producing means to the segment electrode means, and connected between each of the electrodes of said segment electrode means grouped by the short circuit means and the output terminal of said display signal producing means corresponding to each of the grouped electrodes;

(I) said short circuit means being located on the side of the second connecting means opposite the display portion.

4,462,026
ELECTRONIC DISPLAY APPARATUS USING TIME MULTIPLEXED DATA AND CONTROL SIGNALS

Mark L. Munday, Raleigh, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

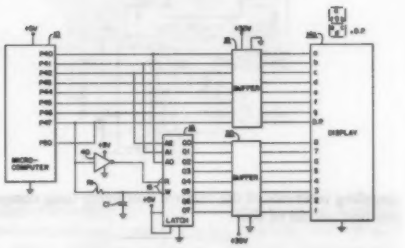
Filed Dec. 17, 1981, Ser. No. 331,931
Int. Cl.[3] G09G 3/10
U.S. Cl. 340—756 8 Claims

1. Electronic display apparatus, comprising:

a display device comprising a plurality of digits and a like number of digit select inputs, each digit comprising a plurality of character segments selectively energizable to form a set of display characters and a like number of segment inputs the energization of which produces energization of the corresponding character segment;

an addressable latch device comprising an ENABLE input, a plurality of address inputs, and a plurality of outputs each connected to one of said digit select inputs and selectable by a unique pattern of energization of said latch address inputs, the selected output being latchably energizable upon actuation of said ENABLE input;

processing means for generating said latch address input energization patterns, for generating data to be displayed, and for converting said display data to a multi-segment code to energize the proper display device segments to



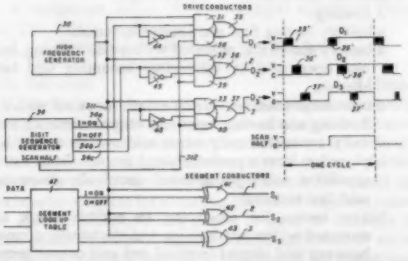
display said data, said processing means comprising a plurality of data outputs each connected to one of said segment inputs, said data outputs also being connected in parallel to said latch address inputs, said processing means comprising a control output connected to said ENABLE input; said processing means energizing in sequence said data outputs with the latch address input pattern corresponding to the desired digit, said control output, and said data outputs with the multi-segment code for the desired character;

said processing means further comprising means for inhibiting the energization of the corresponding digit select input when the data to be displayed therein is a blank character.

4,462,027
SYSTEM AND METHOD FOR IMPROVING THE MULTIPLEXING CAPABILITY OF A LIQUID CRYSTAL DISPLAY AND PROVIDING TEMPERATURE COMPENSATION THEREFOR

William W. Lloyd, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 15, 1980, Ser. No. 121,951
Int. Cl.[3] G09G 3/36, 3/18
U.S. Cl. 340—784 17 Claims



1. In a liquid crystal display system having a liquid crystal material sandwiched between a pair of substrates with a layer of dielectric material having a predetermined capacitance

disposed between said liquid crystal material and said substrates, said liquid crystal display system being responsive to the application of a voltage signal thereto for displaying information on a display thereof, said liquid crystal material having an intrinsic threshold voltage corresponding to a minimum effective root mean square voltage required to begin to drive the display in a first optical state and on intrinsic saturation voltage corresponding to an effective root mean square voltage required for the display to be fully driven in the first optical state, both of which are temperature dependent, a method of adjusting the effective voltage across the liquid crystal material to maintain said threshold and saturation voltages within prescribed limits comprising the steps of:

a. providing a liquid crystal material having a predetermined electrical resistivity versus temperature response within a preselected temperature range so that a reduction in electrical resistance thereof resulting from an increase in display temperature causes a corresponding decrease in the ratio of the effective root mean square voltage to the root mean square voltage of the applied voltage signal, said ratio being a function of the resistance of the liquid crystal material within the preselected temperature range;

b. applying a first voltage signal to selected portions of said display for driving said selected portions in the first optical state and a second voltage signal to other portions of said display for driving said other portions in a second optical state thereby effecting a desired display pattern;

c. allowing the electrical resistance of said liquid crystal material to vary with changes in display temperature so that the effective root mean square voltage across the display resulting from the application of a given voltage signal varies in a predetermined manner, thereby compensating for temperature induced changes in the threshold and saturation voltages within the preselected temprature range without the necessity of changing the voltage signal applied to the display; and

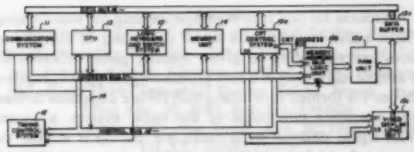
d. selectively adjusting the thickness of the dielectric layer to control the effective root mean square voltage, said ratio of the effective root mean square voltage to the applied root mean square voltage being a function of the capacitance and hence the thickness of the barrier layer, thereby compensating for changes in the threshold and saturating voltages outside of the preselected temeprature range and non-temperature induced changes therein without changing the volage signal applied to the display.

4,462,028

ACCESS CONTROL LOGIC FOR VIDEO TERMINAL DISPLAY MEMORY

Joseph L. Ryan, Tuscon, Ariz.; Elias Safdie; Richard R. Watkins, both of Chelmsford, Mass., and Frederick E. Kobs, East Pepperell, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Feb. 19, 1981, Ser. No. 235,819
Int. Cl.³ G09G 1/06
U.S. Cl. 340—799 **3 Claims**



1. A video control system for accomodating display memory accesses in a video terminal system having video display logic, and further having a CPU and a timing control system electrically connected to a system data bus, said video control system comprising:

CRT control means for supplying binary address codes representative of video characters and visual attributes;

logic multiplexer address means responsive to a first character clock control signal from said timing control system for selecting between binary address codes for a single byte access received from said CPU representative of video characters or visual attributes and binary address codes for a double byte access received from said CRT control means representative of video characters and visual attributes;

logic random access memory means including video character memory byte segments and visual attribute memory byte segments responsive to a read/write mode selection control signal issued by said CPU, for receiving binary video character and visual attribute address codes from said logic multiplexer address means and supplying both a video character data byte and a visual attribute data byte either singly in response to an address from the CPU or concurrently in response to an address from the CRT control means;

logic memory segment selection means responsive to a first logic memory segment control signal received from said logic multiplexer address means, to a second logic memory segment control signal received from said CPU, and to a second character clock control signal received from said timing control system for enabling either a memory segment pair including a video character memory segment and a visual attribute memory segment, or one member of said memory segment pair; and

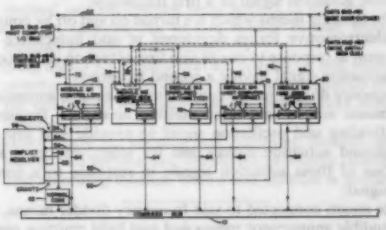
data buffer means responsive to enable control signals received from said CPU and to said first and said second character clock control signals for applying both a visual attribute data byte and a video character data byte from said memory segment pair to said video display logic, and applying a data byte from said one member of said memory segment pair to said data bus.

4,462,029

COMMAND BUS

Leopold Neumann, Lexington; Gerald N. Shapiro, Newton, and Bruno A. Mattedi, Andover, all of Mass., assignors to Analogic Corporation, Wakefield, Mass.

Filed Dec. 6, 1979, Ser. No. 100,710
Int. Cl.³ H04Q 9/00
U.S. Cl. 340—825.5 **10 Claims**



1. In a computer system which includes a number of modules which perform normal data processing functions, said system including a number of parallel data buses, each with a number of lines, with each module connected to at least one data bus via the lines thereof, each of said modules having at least one register;

a command bus connected to each of said modules, said command bus adapted to carry commands in the form of digital coding for either interrupting this normal data processing function of a module and for establishing a switching function, or for reading out the contents of a register in an associated module;

means within selected modules for generating said commands;

means for establishing priority of said commands and for placing said command on said command bus in accordance with the established priority; and

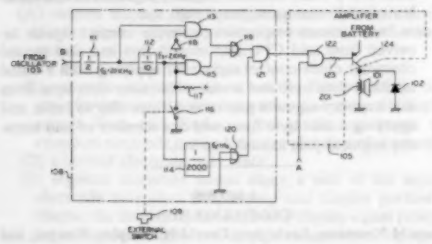
means within more than one predetermined module responsive to a command placed on said command bus for interrupting the normal data processing function of the associated module to transform it into a nonprocessor switch for either establishing a switching function in which a connection path determined by said command is established between the lines of a first and second one of said parallel data buses to permit switching of data from the lines of one data bus to the lines of another in which there is a nonprocessor transfer of data, with no data being processed in the switching operation, of for reading out the contents of a register in said associated module to a temporarily unused data bus.

4,462,030

ELECTRONIC APPARATUS WITH AUDIBLE ANNUNCIATOR AND ALARM LAMP

Daisuke Ishii, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1981, Ser. No. 329,387
Claims priority, application Japan, Dec. 16, 1980, 55-178340
Int. Cl.³ G08B 5/22
U.S. Cl. 340—825.44 **9 Claims**



1. A portable electronic apparatus comprising:

oscillator means for generating an oscillation signal;

audible annunciator means having an inductance element for generating an audible annunciating signal in response to a first actuation signal of a first frequency;

light emitting means which are turned on and off by counter-electromotive forces developed in said inductance element in response to one of said first actuation and a second actuation signal having a second frequency;

frequency divider means coupled to said audible annunciator means and to said light emitting means for frequency-dividing said oscillation signal to provide said first and second actuation signals and for selectively generating one of these actuation signals in response to a control signal;

gate means connected to said frequency divider means, said audible annunciator means and said light emitting means, for supplying said audible annunciator means and said light emitting means with one of said first and second actuation signals in response to an alert signal; and

external switching means for supplying said first control signal to said frequency divider means.

4,462,031

TRAFFIC SYNCHRONIZATION DEVICE

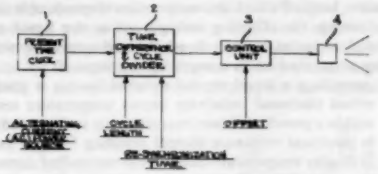
Wilbur E. Johnson, Anaheim, Calif., assignor to Econolite Control Products, Inc., Anaheim, Calif.

Filed Jan. 21, 1983, Ser. No. 460,117
Int. Cl.³ G08G 1/07; G08B 1/00
U.S. Cl. 340—916 **1 Claim**

1. A device for the synchronization of the control unit of a traffic signal supplied by alternating current (a.c.) electrical power comprising

(a) present time clock means for determining the time of day, which present time clock means is synchronized with the a.c. electrical power,

(b) time difference means for calculating the difference between the time of day and a specified re-synchronization time,



(c) cycle divider means for calculating the residue of the division of said time difference by a specified operating cycle length,

(d) pulse means for generating and outputting a synchronizing pulse when said residue is zero,

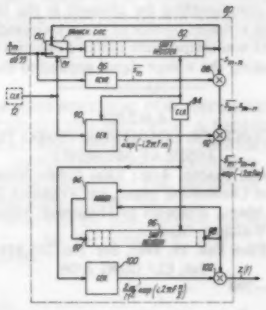
(e) control unit means for adding a time offset to the synchronizing pulse from the pulse generating means and for controlling the traffic signal in response to the offset synchronizing pulse.

4,462,032

RADAR SIGNAL PROCESSING PROCESS AND CIRCUIT

Philippe Martin, 5, Villa Thoreton, 75015 Paris, France

Filed May 12, 1981, Ser. No. 262,899
Claims priority, application France, May 22, 1980, 80 11443
Int. Cl.³ G01S 13/90
U.S. Cl. 343—5 CM **8 Claims**



1. A process for real time signal processing for side-looking, synthetic radar systems, said signal consisting of samples sequences corresponding to given spacing gates, wherein for each sample s_m of rank m a first product signal $p_m = s_m \exp(i\pi(-2\alpha/N^2)m^2)$ is formed in which α and N^2 are constants defined by the operating conditions of the radar system, a second product signal delayed by n ranks (i.e. p_{m-n}) is stored, the conjugate of said first product signal (i.e. $p_m \cdot p_{m-n}$) is formed, the product for fixed n the sum of the products obtained is formed, m assuming all whole values from 0 to M−1, being a predetermined number, which gives, to within a coefficient $2\alpha/N^2$, a Fourier component Z(f) for the frequency f linked with n with $f=(2\alpha/N^2)\ n$, the different components being obtained by giving all whole values from 0 to N/2 to n.

4,462,033

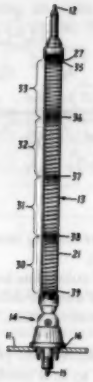
ANTENNA WITH SPRING LOADING COIL

Joseph Grashow, Brooklyn; Melvin J. Berg, Tappan; Joseph L. Dubovy, Peekskill, and Stanley J. Grashow, Nanuet, all of N.Y., assignors to Quick-Mount Manufacturing Co., Inc., Brooklyn, N.Y.

Continuation of Ser. No. 756,239, Jan. 3, 1977, abandoned. This application Jul. 24, 1978, Ser. No. 927,489

Int. Cl.³ H01Q *1/20, 9/32*

U.S. Cl. 343—715 3 Claims



1. A transmitting and receiving antenna having a whip-like elongated conducting rod, a loading coil and a mounting structure, which are mechanically and electrically connected in series and adapted to be mounted above a ground plane, said loading coil being designed to match the antenna impedance presented by the cable and to adjust the equivalent electrical length of the radiation for which the antenna is adapted, characterized in that the loading coil comprises:

an inductive element in the form of four helical springs, said springs being placed in series and touching one another;

a housing for said springs having non-conducting sides and enclosing a space having a cross section substantially the same size as the outside diameter of said springs and a thickness sufficient to support said springs against buckling, said housing having a length somewhat shorter than the overall length of the springs so as to compress their length; and

conducting end pieces located on either end of said housing, one each of said end pieces being connected to said rod and said mounting structure respectively, the ends of the series of springs being in contact with said end pieces without being attached thereto so as to improve its VSWR over a frequency range.

4,462,034

ANTENNA SYSTEM WITH PLURAL HORN FEEDS

Shinichi Betsudan; Katsuhiko Aoki; Shigeru Sato, all of Hyogo, and Takashi Katagi, Kanagawa, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1981, Ser. No. 296,024

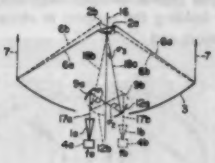
Claims priority, application Japan, Aug. 28, 1980, 55-119988

Int. Cl.³ H01Q *19/19*

U.S. Cl. 343—761 3 Claims

1. In an antenna system of the offset feed type comprising a plurality of horns adapted to radiate radio waves in different frequency bands, said horns being arranged around the axis of a main reflector and switched for radiating the respective radio waves, and a non-rotationally-symmetric sub-reflector, the improvement comprising:

means, including a beam waveguide system comprising at least two focusing reflectors for cancelling the cross polarization which is produced by the offset feed operation



of the non-rotationally-symmetric sub-reflector of said antenna system.

4,462,035

NON-IMPACT RECORDING DEVICE

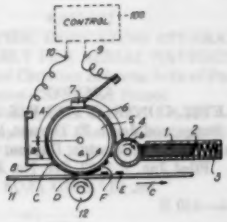
Haruhiko Koto, Shiojiri, Japan, assignor to Epson Corporation, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan

Filed Mar. 15, 1982, Ser. No. 357,923

Claims priority, application Japan, Mar. 16, 1981, 56-37607; Mar. 16, 1981, 56-37609

Int. Cl.³ G01D *15/10;* H05B *1/00*

U.S. Cl. 346—76 PH 21 Claims



1. A non-impact recording device for recording with ink on a recording medium, comprising:

a recording member having a coating of ink on the surface thereof, said ink coating being subject to melting;

means for applying ink to said surface of said recording member to form said coating;

writing means for melting said ink coating on said recording member surface, said writing means acting directly on said ink coating to melt said coating, intermediate elements being absent;

transfer means for pressing said recording medium against said coated surface, said melted ink becoming attached to said recording medium where said medium is pressed.

4,462,036

OPTICAL DISC ASSEMBLIES FOR OPTICAL DISC WRITE/READ APPARATUS

Eric M. Leonard; Frederick F. Geyer, both of Rochester, and George M. Myers, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 14, 1982, Ser. No. 434,203

Int. Cl.³ G01D *15/32*

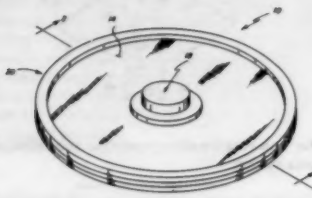
U.S. Cl. 346—137 8 Claims

1. An optical disc assembly for use with (1) a disc assembly receiving structure having an annular locating surface rotatable about an axis in a first plane that is normal to said axis and (2) lens means for focusing light of selected wavelengths at a focal plane parallel to said first plane, said optical disc assembly comprising:

(a) a flexible, disc-shaped support carrying a record layer having an annular information storage region, said support

having an annular area radially inward of said storage region engageable with the locating surface;

(b) an annular retaining ring engaging said support around its peripheral region radially outwardly of said storage region for holding the support in circumferentially-symmetric tension; and



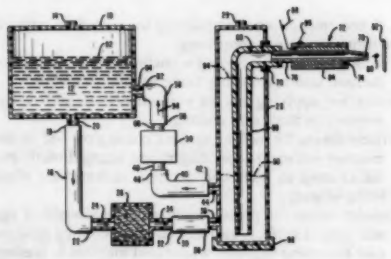
(c) a hub central of said support for positioning said annular area of said support firmly against the locating surface of said receiving structure with a predetermined abutting force.

4,462,037

INK LEVEL CONTROL FOR INK JET PRINTER

Richard G. Bangs, and Jacob E. Thomas, both of Ithaca, N.Y., assignors to NCR Corporation, Dayton, Ohio

Filed Jun. 7, 1982, Ser. No. 385,955
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **20 Claims**



1. Means for controlling the level of ink in an ink jet printing system comprising a

first reservoir containing a quantity of ink, a

second reservoir containing a quantity of ink,

means providing an ink supply line and an ink return line connecting the first and the second ink reservoirs,

means operably associated with said second reservoir for ejecting ink in droplet form, and

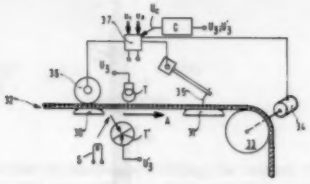
means associated with the ink return line for causing continuous flow of ink from the second reservoir to the first reservoir and establishing a first ink level in the second reservoir adjacent the ink return line during operation of the printing system and for allowing flow of ink from the first to the second reservoir and establishing a second ink level in the second reservoir adjacent the ink ejecting means during non-operation of the printing system.

4,462,038

MULTICOLOR RECORDING CARRIER AND METHOD OF RECORDING

Werner Jung, Waiblingen, and Hans-Georg Mall, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 6, 1981, Ser. No. 222,999
Int. Cl.³ G01D *15/08*
U.S. Cl. 346—163 **18 Claims**



1. A combination of a recording image carrier comprising an insulating substrate (1, 3);

a multicolor pattern of color dots having individual colors in which each dot is of a single color, closely adjacent each other to form a color dot pattern, located in groups (17) on the substrate;

a metallized layer (2) above said groups of color dots; and

magnetic dots applied to said insulating substrate in predetermined location with respect to a dot of a predetermined color of said color dots (16); with

color recording apparatus comprising

a recording stylus electrode (35) in engagement with the metallized layer (2) of the recording carrier;

means (37) to provide energization pulses to said electrode to burn off a selected portion of the metallized layer above a selected color dot, or selected color dots;

electromagnetic transducing means positioned for electromagnetic sensing of magnetic induction upon passage of the magnetic marker element on the recording carrier beneath the transducing means;

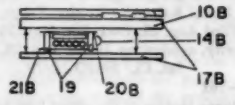
and control means (c) controlling application of a burn-off signal to the electrode (35) in accordance with the position of the electrode on the recording carrier with reference to said magnetic dot as sensed by said electromagnetic transducing means.

4,462,039

PLASTIC IDENTIFICATION CARD HAVING AN IMPROVED SIGNATURE PANEL

Edward A. Small, Nepean, and Geoff C. Wright, Ottawa, both of Canada, assignors to British American Bank Note Inc., Ottawa, Canada

Filed Nov. 8, 1982, Ser. No. 439,830
Claims priority, application Canada, Dec. 14, 1981, 392198
Int. Cl.³ B41M *5/16, 5/22*
U.S. Cl. 346—206 **7 Claims**



1. An identification card comprising a core stock, a signature panel of a layer of chemicals reactive under pressure to form a dye in a single layer so as to be self-imaging printed on the core stock, a layer of a blocking compound on said layer of chemicals to protect said chemicals from a subsequently applied

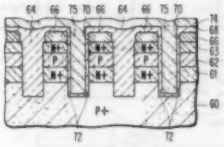
coating and a coating of polymer which covers and adheres to at least said signature panel.

4,462,040

SINGLE ELECTRODE U-MOSFET RANDOM ACCESS MEMORY

Irving T. Ho, and Jacob Riseman, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 036,722, May 7, 1979, Pat. No. 4,252,579. This application Mar. 30, 1980, Ser. No. 192,281
Int. Cl.³ H01L *27/04, 29/78;* G11C *11/40*
U.S. Cl. 357—23 **4 Claims**



1. A highly dense MOSFET single channel random access memory device structure comprising:

a plurality of monocrystalline regions on a P substrate isolated from one another by a pattern of U-shaped in cross-section dielectric regions;

said monocrystalline regions being bisected into two like regions by a U-shaped in cross-section region having a silicon dioxide surface and the remaining central area filled with conductive polycrystalline silicon;

said two like regions each contain a N+ layer on said P substrate, a P layer on said N+ layer, a N+ layer on said P layer, and a N+ polycrystalline silicon layer on the said N+ layer on said P layer;

said conductive polycrystalline silicon in said central area being connected over an insulated surface with a line of similar regions;

said silicon dioxide surface being the gate insulator, said N+ layers being the source/drain, said P between said N+ layers containing the channel region, said N+ polycrystalline region being the contact to the said N+ layer on the said P layer, said conductive polycrystalline silicon in said central area being the gate electrode of said MOSFET; and

said N+ polycrystalline region being connected to identical said like regions as the bit line, said conductive polycrystalline silicon connected with a said line of similar regions being the word line, the PN junction between said P substrate and said N+ layer thereon being the storage capacitor of said random access memory.

4,462,041

HIGH SPEED AND CURRENT GAIN INSULATED GATE FIELD EFFECT TRANSISTORS

R. Douglas Glenn, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Mar. 20, 1981, Ser. No. 246,077
Int. Cl.³ H01L *29/78*
U.S. Cl. 357—23 **25 Claims**

1. A high speed, high current gain insulated gate field effect transistor comprising:

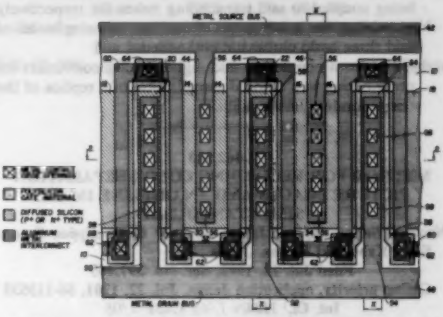
a body region of semiconductor material having a first conductivity type;

a continuous source region and a continuous drain region each having a second conductivity type opposite said first conductivity type spaced apart in the surface of said body region defining a channel region therebetween;

a gate over said channel region between said source and drain regions and separated from said body by an insulative layer;

a source conductor in contact with said source region at a plurality of distinct positions adjacent said channel region;

a drain conductor in contact with said drain region at a



plurality of distinct positions across said channel from corresponding source distinct positions;

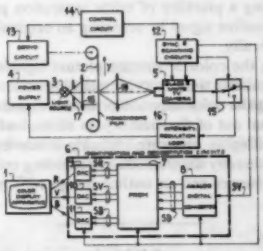
said source conductor and said drain conductor form a plurality of electrically parallel insulated gate transistors having a common source region, common drain region and common gate.

4,462,042

CARTOGRAPHIC INDICATING APPARATUS, PARTICULARLY FOR AERIAL NAVIGATION

Jean C. Reymond, and Christian Brisseau, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 4, 1982, Ser. No. 345,629
Claims priority, application France, Feb. 10, 1981, 81 02595
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—22 **12 Claims**



1. A system for visually reproducing in a predetermined number n of distinctive colors a multicolor document with image points whose coloration includes the three basic chromatic components red, green and blue, comprising:

a spectrum-compressing device including optical filter means for converting each image point of said document into data transferred to a recording medium for storage thereon, said data consisting for each image point of at most two signal levels separately identifiable on said recording medium;

analyzing means for scanning said recording medium to recover therefrom the stored signal levels pertaining to respective image points;

analog-digital conversion means connected to said analyzing means for quantizing each signal level as one of n binary values corresponding to said number of distinctive colors;

transcoding means connected to said analog-digital conversion means for replacing the binary values pertaining to

said image points by respective sets of three m-bit words each, with $2^m < n$, said transcoding means including a read-only memory addressable by said binary values for delivering said three m-bit words of each set to respective digital-analog converters, said digital-analog converters being coupled to said transcoding means for respectively translating the m-bit words of each set into amplitudes of said three basic chromatic components; and

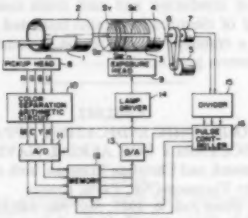
display means coupled to said digital-analog converters for contributing to a colored visualization of a replica of the corresponding image point.

4,462,043

METHOD FOR RECORDING COLOR SEPARATION PICTURE IMAGES AND AN OUTLINE IMAGE SIMULTANEOUSLY

Naotada Saitou, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Japan

Filed Jul. 12, 1982, Ser. No. 397,460
Claims priority, application Japan, Jul. 22, 1981, 56-113535
Int. Cl.³ H04N *1/46*; G03F *3/08*
U.S. Cl. 358—75 **3 Claims**



1. A method for recording color separation picture images and an outline image simultaneously for use in a picture reproducing machine, comprising the steps of:

(a) obtaining a plurality of color separation picture signals and an outline signal by scanning an original picture photoelectrically;

(b) storing the color separation picture signals and the outline signal into a memory, in parallel;

(c) reading the color separation picture signals and the outline signal out of the memory, in series; and

(d) controlling an exposure scanning means by the readout signals, thereby simultaneously recording color separation picture images and an outline image on a photosensitive material.

4,462,044

TIMING SYSTEM FOR A THREE DIMENSIONAL VIBRATING MIRROR DISPLAY

Robert L. Thomason, Corona del Mar, and Henry S. Stover, Montclair, both of Calif., assignors to Spacegraph, Ltd., Irvine, Calif.

Filed Jul. 23, 1982, Ser. No. 401,407
Int. Cl.³ H04N *9/54*
U.S. Cl. 358—89 **22 Claims**

1. A timing system for providing a display reference signal responsive to the momentary sweep rate through the viewable volume of three dimensional displays having a repetitive and nonuniform sweep rate through the Z axis of the viewable volume comprising:

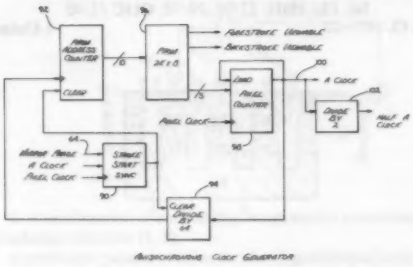
sensing means for providing a repetitive signal indicative of a predetermined Z axis position of the display on its sweep along the Z axis of the viewable volume,

first clock means for providing a predetermined high frequency first clock signal,

memory means for storing predetermined data at predetermined addresses and for providing said data as data outputs in accordance with addresses presented thereto,

addressing means responsive to said sensing means to address a predetermined address of said memory means when the display is at a predetermined Z axis position, and

second clock means coupled to said memory means and said first clock means, said second clock means being a means for providing a second clock signal responsive to a number of reoccurrences of said first clock signal as determined by the data output of said memory means,



said addressing means also being responsive to one of said first and second clock means to change the address in response to the reoccurrence of a predetermined number of clock signals of said one of said first and second clock means,

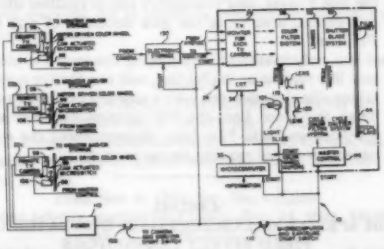
whereby said second clock means will be responsive to the momentary sweep rate through the viewable volume in a manner determined by the data stored in said memory means.

4,462,045

METHOD OF AND APPARATUS FOR DOCUMENTING AND INSPECTING A CARGO CONTAINER

Philip R. Norric, North Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 28, 1981, Ser. No. 334,734
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—93 **11 Claims**



1. A documenting inspection system for a cargo container comprising:

imaging means for imaging different views of a cargo container positioned at an inspection station;

means for communicating signals representing each said image from said imaging means to a given location including a plurality of televeision cameras each of which is positioned to image a different view of the cargo container; and

means for receiving and recording said communicated images of different views and additionally alphanumerical information relating to said object on a single, hard copy in a predetermined format, said receiving and recording

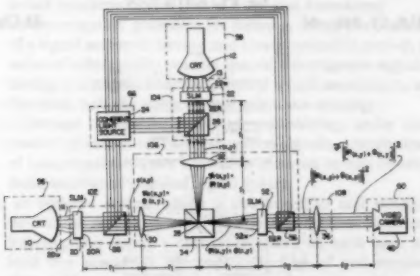
means additionally includes a plurality of video monitors each one of which is connected to a respective one of said cameras for displaying the images of the associated camera, whereby all said images of said different views are generally simultaneously displayed, said hard copy is defined by a photosensitive material of the self-developable type, wherein the predetermined format includes having the images of the different views of the container arranged in a composite manner, whereby the recorded images present the container in a manner that is recognizable by a viewer of the container as a true picture of the container being imaged thereby providing recorded images of the object from which the condition of the latter may be ascertained and identifying information relating to the object.

4,462,046

MACHINE VISION SYSTEM UTILIZING PROGRAMMABLE OPTICAL PARALLEL PROCESSING

Carl Spight, Columbia, Md., assignor to AMAF Industries Incorporated, Columbia, Md.

Filed Jul. 2, 1982, Ser. No. 394,812
Int. Cl.³ H04N 7/18
U.S. Cl. 358—101 **58 Claims**



1. A vision system for an industrial robot, said vision system identifying and determining the location and spatial orientation of an object being viewed and comprising:

input means for producing an object signal indicative of said object being viewed;

reference generator means for producing a reference signal indicative of a spatial orientation of a desired object to be identified;

correlation means for cross-correlating said object signal and said reference signal to produce a correlated signal; and

discrimination means for determining the degree of correlation between said object signal and said reference signal, a high degree of correlation indicating that said object being viewed is said desired object to be identified arranged in the spatial orientation of said reference signal;

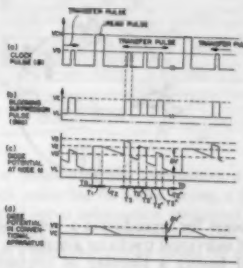
said reference generator means iteratively producing new reference signals indicative of a new spatial orientation of said desired object to be identified for cross-correlation and determination by said correlation means and said discrimination means.

4,462,047

SOLID STATE IMAGER WITH BLOOMING SUPPRESSION

Makoto Fujimoto, Takatsuki; Yoshio Ohta, Amagasaki, and Takao Chikamura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 1, 1982, Ser. No. 394,168
Claims priority, application Japan, Jul. 1, 1981, 56-102784
Int. Cl.³ H04N 3/12, 3/14
U.S. Cl. 358—212 **2 Claims**



1. A solid state imaging apparatus having a plurality of cells for accumulating charge signals in response to an intensity of an incident light from an object; charge transfer means connected to said cells through a switching element; and driving means for applying a read pulse and a transfer pulse to said switching element and said transfer means, respectively, to read the charge signals from said cells and transfer those signals, thereby producing a video signal, in which

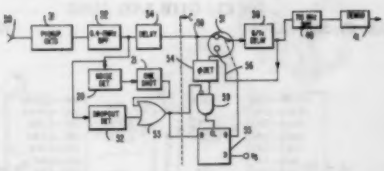
a blooming suppression means is provided for supplying a blooming suppression pulse synchronous with said transfer pulse to a node between said cell and said switching element through a capacitive coupling.

4,462,048

NOISE REDUCTION CIRCUITRY FOR AUDIO SIGNALS

Michael D. Ross, Somerdale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 11, 1982, Ser. No. 348,025
Int. Cl.³ H04N 5/76
U.S. Cl. 358—336 **13 Claims**



1. Circuitry for compensating defects in an audio signal, which signal is in the form of a carrier modulated by an audio signal, said circuitry comprising:

means for delaying said modulated carrier by an integral multiple of carrier cycles;

means for detecting the occurrence of defects in the modulated carrier and generating control pulses responsive thereto; and

switch means responsive to said control pulses for substituting the delayed modulated carrier for defects in the non-delayed modulated carrier.

4,462,049
PROCESS FOR PRODUCING A VIDEO SIGNAL RECORDED ON A RECORD CARRIER

Jürgen Heitmann, Seeheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 20, 1981, Ser. No. 323,353
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1980, 3045541
Int. Cl.³ H04N *5/783*; G11B *21/10*
U.S. Cl. 360—10.2 6 Claims

1. A process for reproducing a video signal recorded in a plurality of individual tracks on a magnetic tape by a rotating head-wheel having a plurality of circumferential magnetic recording/reproducing heads, wherein

the magnetic tape helically loops the head-wheel, and the individual tracks are inclined to the longitudinal direction of the tape,

said process, in accordance with the invention, reproducing the information content of each television field distributed over a plurality of the tracks, and

the reproduction being effected at a speed different from that of recording, comprising the combination of steps of deflecting each head at the circumference of the head-wheel in a direction perpendicular to the plane;

maintaining at all times at least two heads on the head-wheel simultaneously in contact with the tape;

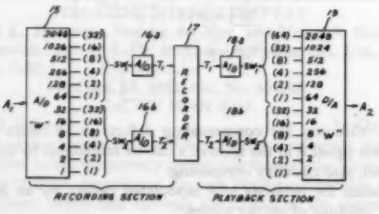
controlling the deflection of each head on the head-wheel in such manner that at any given time at least one of the said two heads in contact with the tape is guided along a recorded track; and

selectively switching the outputs from said heads in such manner that reproduced picture information is continuously available in correct sequence from the outputs of the magnetic heads.

4,462,050
HYBRID DIGITAL-ANALOG SIGNAL RECORDING-PLAYBACK SYSTEM

J. Rodney Cox, 8121-3 Lake Ave., Louisville, Ky. 40222

Filed Mar. 10, 1982, Ser. No. 356,848
Int. Cl.³ G11B *5/00, 15/02*
U.S. Cl. 360—32 13 Claims



1. A hybrid digital-analog signal recording/playback system comprising:

a recording section having

an input signal channel for supplying an analog input signal;

means including a first signal sampling circuit for periodically sampling the amplitude level of the input signal;

first analog-to-digital converting means for converting the amplitude level of each signal sample into a composite digital word having a predetermined number of bits;

means for separating the bits of the composite word into a plurality of sub-words representative of progressively finer resolution of the amplitude level of the signal sample;

and means including first digital-to-analog converter circuits for converting the sub-words into analog signal levels in modulated form suitable for analog recording on separate tracks of a signal recording medium;

and a playback section having

means for reproducing the recorded signals from the separate tracks of the recording medium;

second analog to digital converting means for reconverting the amplitude levels of the reproduced signals into sub-words corresponding to the sub-words of the recording section;

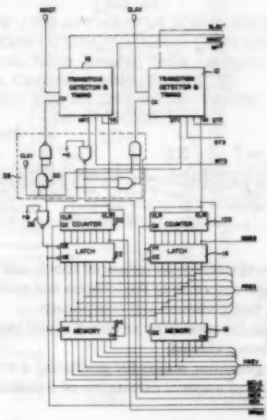
means for recombining the reconverted sub-words into a composite digital word corresponding to the composite digital word of the recording section;

and means including a second digital-to-analog converter circuit for converting successive ones of the recombined composite digital words into a continuous analog signal corresponding to the analog input signal supplied at the input signal channel of the recording section.

4,462,051
DEMODULATOR FOR AN ASYNCHRONOUS BINARY SIGNAL

Steven S. Chan, Fremont, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 2, 1982, Ser. No. 365,085
Int. Cl.³ G11B *5/09*
U.S. Cl. 360—44 32 Claims



1. Apparatus for decoding a binary signal that comprises a series of bit cells, each of which contains one bit of binary information, comprising:

means for detecting transitions in the binary signal;

means responsive to said transition detector for determining the length of a pulse between two successive transitions;

a memory unit for storing the total length of the bit cell immediately preceding said pulse;

means for comparing the determined pulse length with the stored bit cell length and for providing an indication relating to whether there is a significant difference in the length of said pulse relative to that of said bit cell; and

means responsive to the indication from said comparing means for providing an output signal related to the binary state said pulse represents.

4,462,052

DEVICE FOR INTERROGATING AND CORRECTING A SERIAL DATA SIGNAL

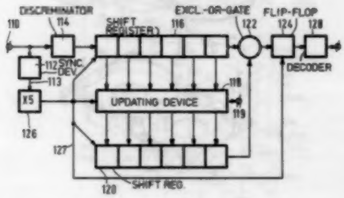
Cecil H. Kaplinsky, Sunnyvale, Calif., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 5, 1982, Ser. No. 365,713

Claims priority, application Netherlands, Apr. 14, 1981, 8101825

Int. Cl.³ G11B *5/09*

U.S. Cl. 360—53 4 Claims



1. A device for interrogating and correcting a serial data signal which consists of a non-interrupted series of data cells and therein a continuous signal having a finite number of discrete nominal signal values and transitions between said signal values, said transitions mutually having a nominal minimum spacing and a nominal maximum spacing, characterized in that the device comprises:

a. a synchronization device for deriving and updating an actual synchronization period from said transitions;

b. an interrogation generator for forming, under the control of a signal sequence having said synchronization period, a series of substantially equally spaced interrogation signals having a nominal recurrence period which amounts to, at the most, half the value of said minimum spacing;

c. a storage device for receiving and storing, under the control of said series of interrogation signals, a succession of interrogation values each discriminated to one of said finite number of nominal signal values;

d. an updated device which is connected to said storage device for receiving, each time in synchronism with an interrogation signal, a current selection of, each time, at least five successive interrogation values of said succession, said successive interrogation values comprising at least one interrogation value beyond the number which corresponds to the length of a data cell, for generating, under the control of one of a first predetermined number greater than 1 of permissible combinations of said successive interrogation values, a correspondence signal for the relevant combination, for generating, under the control of one of a second predetermined number greater than 1 of impermissible combinations of said successive interrogation values, a simulation signal for simulating, each time for an impermissible combination, a corresponding permissible combination which differs therefrom by one interrogation value and which is part of a third predetermined number greater than 1 of permissible combinations of successive interrogation values, and for generating an exceed signal under the control of further impermissible combinations of said successive interrogation values;

e. a decoder for receiving said corresponding or simulated interrogation values and for reconstructing a series of digital data therefrom; and

f. a final output which is connected to the decoder for supplying a decoded series of data to a user device.

4,462,053

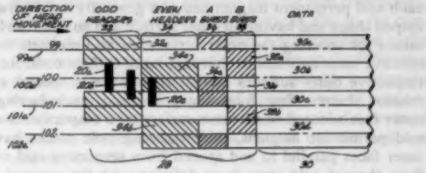
METHOD FOR CONTROLLING A DISC HEAD

Francis Lum, Ann Arbor; Bruce Graham, Ypsilanti; Samuel N. Irwin, Ann Arbor, and Juan F. Velazquez, Saline, all of Mich., assignors to Irwin International, Inc., Ann Arbor, Mich.

Filed Jul. 2, 1981, Ser. No. 280,137

Int. Cl.³ G11B *21/08, 21/10*

U.S. Cl. 360—78 20 Claims



5. A method for positioning and maintaining a disc head over a desired track centerline on a disc having a plurality of tracks and embedded servo information associated with each of said tracks including track identification, said disc being rotatably carried on a disc drive having means for moving said disc head, said method comprising the steps of:

reading a portion of said embedded servo information;

determining the current position of said disc head with an uncertainty of no greater than one-half track width;

calculating the minimum possible distance between said current disc head position and said desired track centerline;

calculating a driving signal generally proportional to said minimum possible distance;

applying said driving signal to said disc head moving means; and

returning to said reading step.

4,462,054

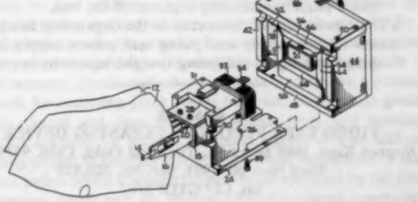
DISC DRIVE ELECTROMAGNETIC ACTUATOR WITH ENHANCED FLUX DENSITY

Charles W. Dong, San Jose, and Michel Barrat, Menlo Park, both of Calif., assignors to Sperry Corporation, New York, N.Y.

Filed May 19, 1982, Ser. No. 379,599

Int. Cl.³ G11B *5/54, 21/08*

U.S. Cl. 360—106 5 Claims



1. An electromagnetic linear actuator for moving a read/-write head radially of a rotating data disc comprising a head supporting carriage, said carriage having an end remote from the head that has a generally rectangular cross-sectional shape and defines a generally rectangular opening extending axially thereof, a voice coil secured to said carriage end and having a rectangular cross-sectional shape substantially coaxial of said end, means for supporting said carriage for axial movement on an axis that extends generally radially of said disc, a magnetic housing having walls defining a rectangular cavity that has an

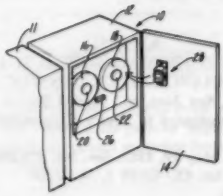
open end disposed to afford movement of said carriage and said voice coil within said cavity, said housing having a rear magnetic plate mounted to said walls in magnetic circuit therewith, said rear plate extending substantially transversely of the direction of axial movement of said carriage, a central core piece fixed to said rear plate within said cavity and extending in a direction parallel to the direction of axial movement of said carriage, said core piece having a rectangular cross-sectional shape sized to fit within said rectangular opening and said voice coil, four permanent magnets disposed in said housing, each said permanent magnet being of generally right parallelepiped shape and having an outer surface and an inner surface, means for securing the outer surfaces of said magnets to respective housing walls so that said inner surface confront the respective outer surfaces of said core piece in spaced apart relation thereto, four focussing pole pieces each having an outer face secured to an inner surface of a respective one of said permanent magnets, said focussing pole pieces having inner faces parallel to and spaced from respective said outer faces thereof, said inner faces defining with the external surfaces of said central core piece an annular, axially extending working gap sized to receive said coil and said carriage end therein, said focussing pole pieces having a trapezoidal cross-sectional shape so that the area of the inner faces thereof is less than the area of said outer faces in order that the flux density in said working gap exceeds the flux density of said permanent magnets.

4,462,055

BULK TAPE ERASING SYSTEM

Leon D. Jackson, Troy; Dan O. Morris, Clawson, and Alan J. Blohm, Mt. Clemens, all of Mich., assignors to LDJ Electronics, Inc., Troy, Mich.

Filed Jan. 4, 1982, Ser. No. 336,654
Int. Cl.³ G11B 5/02
U.S. Cl. 360—118 **16 Claims**



1. Bulk tape erasing apparatus, said apparatus comprising:
first means for mounting a degaussing head adjacent to a rotating reel of tape so that magnetic fields from the head span a radially extending segment of the reel;
a DC power supply connected to the degaussing head; and
means for selectively energizing said power supply in response to a signal indicating that the tape is to be erased.

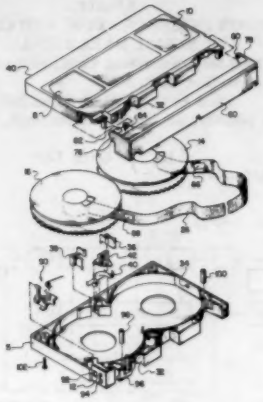
4,462,056

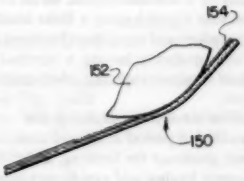
VIDEO TAPE RECORDER CLEANING DEVICE

Stephen Kara, 2609 Sapra St., Thousand Oaks, Calif. 91362

Filed Nov. 30, 1981, Ser. No. 325,923
Int. Cl.³ G11B 5/41
U.S. Cl. 360—128 **6 Claims**

1. A cleaning device for a video tape recorder of the type adapted to move a video tape between two reels along a predetermined path in moving contact with a plurality of operating heads and tape guides, at least some of said heads including a plurality of circumferential grooves, said device comprising:
a cassette housing adapted to be inserted into the recorder in the manner of a video tape cassette,
a pair of tape reels rotatably supported within the housing, and
a cleaning tape carried on said reels and adapted to be advanced along the recorder tape path from one reel to the other in moving contact with the operating heads and tape guides when the cassette housing is inserted into the recorder and the recorder operated, said cleaning tape having a non-abrasive surface contacting the recorder operating heads and tape guides, said non-abrasive surface including an array of bristles adapted to extend into the head grooves and effect a scrubbing action to remove deposits from both the periphery of the heads and from their grooves as the tape is advanced.





4,462,057

A.C. SWITCHING CIRCUIT

Masato Kobayashi, Shijonawate; Hideki Fukuzono, Osaka, and Hiromi Nishimura, Takatsuki, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Aug. 27, 1982, Ser. No. 412,244
Claims priority, application Japan, Sep. 4, 1981, 56-139944
Int. Cl.³ H02H 3/00, 7/00
U.S. Cl. 361—2 **4 Claims**

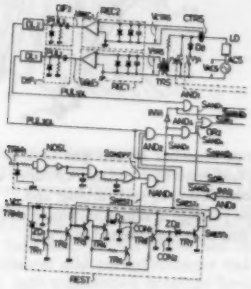
1. An A.C. switching circuit including a first contact means connected through a diode in series with an A.C. source and a load, a second contact means connected in parallel with a series circuit of said diode and said first contact means, first and second latching relays respectively for driving said first and second contact means to open and close their contacts, and first and second flip-flops respectively for actuating said first and second latching relays; said switching circuit comprising
(a) a first detection circuit for generating a pulse in response to each cycle of an A.C. source current when said first and second contact means are opened,
(b) a second detection circuit for generating a pulse in response to each said cycle of said source current when the first and second contact means are closed,
(c) a signal source of instructions for opening and closing the first and second contact means,
(d) a first gate circuit allowing an output of said first detec-

tion circuit passed therethrough when an instruction for closing the first and second contact means is provided from said signal source,

(e) a second gate circuit allowing an output of said second detection circuit passed therethrough when an instruction for opening the first and second contact means is provided from the signal source,

(f) a first monostable multivibrator generating an output of a predetermined width in response to outputs of said first and second gate circuits,

(g) a second monostable multivibrator generating an output



having a width smaller than said predetermined width of said output of said first multivibrator,

(h) third and fourth gate circuits applying said outputs of said first and second multivibrators to a first drive terminal of each of said first and second flip-flops when said instruction for closing the first and second contact means is provided from the signal source, and

(i) fifth and sixth gate circuits applying said outputs of said first and second multivibrators to a second drive terminal of each of said first and second flip-flops when said instruction for opening the first and second contact means is provided from the signal source.

4,462,058

SWITCHING APPARATUS FOR DEVICES FOR ALTERNATING CURRENT PARALLEL REMOTE FEED

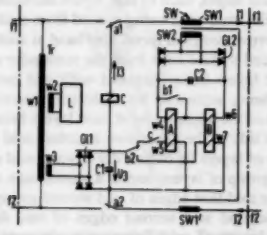
Alfred Ziegler, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 22, 1982, Ser. No. 421,287

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1981, 3145437

Int. Cl.³ H02H *3/00, 7/00*; H02J *3/00, 7/00*

U.S. Cl. 361—62 **10 Claims**



1. Switching apparatus for connection in an intermediate station between an alternating voltage source and a following station in an alternating current parallel feed from the source to the stations, the feed having a pair of feed conductors, said switching apparatus comprising:

a d.c. voltage source for producing a d.c. voltage;

switch means including a pair of transfer switches each interposed in a respective one of the feed conductors; and

control means connected to said feed conductors and to said switch means and operable in response to a current-free condition on the feed conductors to control said switch means to connect said d.c. voltage source to the following station via said transfer switches and the feed conductors, operable in response to a direct current, due to the connected d.c. voltage source, within a predetermined range to through-connect the feed conductors to the following station via said transfer switches, and operable in response to alternating current outside of a predetermined range to control said switch means to connect said d.c. voltage source to the following station via said transfer switches and the feed line.

4,462,059

DEMAGNETIZING POWER SOURCE

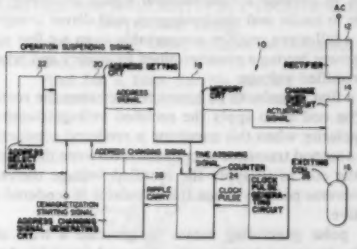
Kikuo Yamagami, and Koji Yokoyama, both of Nagano, Japan, assignors to Kanetsu Kogyo Kabushiki Kaisha, Ueda, Japan

Filed Oct. 7, 1981, Ser. No. 309,375

Claims priority, application Japan, Oct. 27, 1980, 55-149323

Int. Cl.³ H01F *13/00*

U.S. Cl. 361—149 **7 Claims**



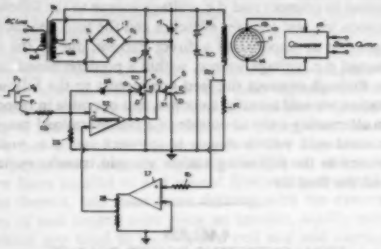
1. A demagnetizing power source for supplying direct current from a rectifying circuit to a exciting coil which current has its polarity changed over alternatively by a polarity changing-over circuit and its change-over cycle gradually decreased to produce an attenuation alternating field for demagnetization in said exciting coil, comprising a memory circuit for storing a plurality of demagnetization patterns and sending actuating signals to said polarity changing-over circuit, an address setting circuit for sending address assigning signals assigned by a initial address selecting means for selecting said demagnetization pattern according to demagnetization starting signals to said memory circuit, a clock pulse generating circuit, a counter circuit for receiving clock pulses from said clock pulse generating circuit and time assigning signals from said memory circuit assigned by address assigning signals of said address setting circuit to produce ripple carry when the number of said clock pulses reach a predetermined value specified by the time assigning signal and an address changing signal generating circuit for receiving said ripple carry and sending the address changing signals respectively to said address setting circuit and said counter circuit to advance the output address assigning signal sent from said address setting circuit to said memory circuit towards sequentially succeeding address assigning signals according to the selected demagnetization pattern and apply the succeeding time assigning signals produced from said memory circuit to the input of said counter circuit, whereby the quiescent condition is set by quiescent signals sent from said memory circuit to said address setting circuit after performing one selected demagnetization pattern.

4,462,060

CONSTANT-CURRENT DUTY-CYCLE DRIVER FOR ELECTROMAGNETIC FLOWMETER

Roy F. Schmoock, Yardley, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Nov. 16, 1982, Ser. No. 442,135
Int. Cl.³ G01F 1/58
U.S. Cl. 361—154 9 Claims



1. In an electromagnetic flowmeter provided with a flow tube having a pair of electrodes mounted at diametrically-opposed positions thereon, and an electromagnet having an excitation coil to produce a transverse magnetic field within said tube, the voltage induced in the liquid passing through said tube and intersecting said field being transferred to the electrodes to provide a flow-induced signal; an energy-efficient driver to excite said electromagnet, said driver comprising:

A. a full-wave rectifier connectable to an a-c line supplying power having a predetermined frequency and producing a rectified voltage;

B. a first transducer so connected between the rectifier and the coil as to apply the rectified voltage thereto in one polarity when this transistor is rendered conductive;

C. a second transistor so connected between the rectifier and the coil as to apply the rectified voltage thereto in the reverse polarity when this transistor is rendered conductive;

D. pulse generating means to generate a train of pulses having a constant repetition rate and a variable duty cycle;

E. Gating means to alternately actuate the transistors at a predetermined gating rate with said train of pulses whereby the rectified voltage is intermittently applied to the coil during successive positive and negative gating intervals whereby current is caused to flow in the coil, first in one direction and then in the reverse direction; and

F. Means responsive to current flow in said coil to produce a control signal which is applied to the pulse generating means to vary the duty cycle of the pulses in the train to correct for fluctuations in said current to produce current flow in the coil at a substantially constant level.

4,462,061

AIR TURBINE DRIVE FOR ELECTROSTATIC SPRAY GUN

Gordon V. Mommsen, Brooklyn Center, Minn., assignor to Graco Inc., Minneapolis, Minn.

Filed Jun. 29, 1983, Ser. No. 508,881
Int. Cl.³ B05B 5/00
U.S. Cl. 361—227 10 Claims

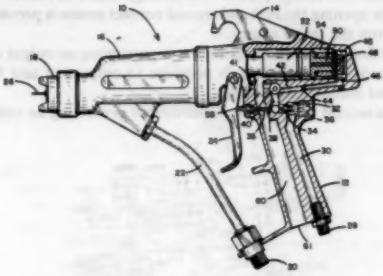
1. An electrostatic spray gun having an internal air turbine mechanically linked to a rotatable electric generator and electric circuitry coupled to said generator for developing high voltage in response to pressurized air delivered to said gun, comprising:

(a) an air coupler attached to said gun for receiving said pressurized air;

(b) an internal passage in said gun passing between said air coupler and said air turbine;

(c) an externally actuable air valve in said passage for opening and closing said passage;

(d) an air flow regulator in said passage;



(e) an exhaust chamber in said gun at least partially surrounding said generator and said circuitry and coupled in air flow connection to said turbine; and

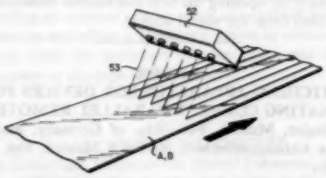
(f) an exhaust passage in said gun connected to said exhaust chamber and opening external said gun.

4,462,062

CAPACITIVE STRUCTURE

Charles C. Rayburn, Lynchburg, Va., assignor to Illinois Tool Works Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 238,717, Feb. 27, 1981, abandoned. This application Mar. 15, 1983, Ser. No. 475,570
Int. Cl.³ H01G 4/08
U.S. Cl. 361—323 11 Claims



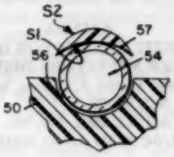
1. A capacitive structure comprising a length of a plurality of layers, each said layer having opposed edges; each said layer comprising a dielectric substrate and a metallic film, said metallic film extending from a first one of said edges toward a second one of said edges, each of said layers including a zone free of metallic film, said zone being spaced from said second edge leaving a narrow marginal metal film band at said second edge which is spaced by said zone from the remainder of said metallic film, said layers being disposed with said metallic film of each layer being separated by dielectric material from said metallic film of the adjacent layer, said layers being offset such that at a first side of the capacitive structure said first edges of a first group of layers lie outwardly beyond said second edges of a second group of layers, and at a second side of the capacitive structure said first edges of said second group of layers lie outwardly beyond said second edges of said first group of layers, said layers of said first group alternating with said layers of said second group, and the outwardly lying edges of said layers of each group being coated with electrically conductive material to electrically connect said metallic film of each layer of each respective group.

4,462,063

PHOTOFLASH UNIT HAVING OPTICAL SYSTEM INCLUDING ASPHERIC LENS TO ENHANCE LIGHT OUTPUT

George J. English, Reading, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jan. 21, 1982, Ser. No. 341,420
Int. Cl.³ G03B 15/02
U.S. Cl. 362—11 20 Claims



1. A photoflash unit comprising:
an electrically insulative, light-transmitting housing having an elongated opening therein and defining a back reflector surface thereon relative to said elongated opening;
a curved reflector located on said back reflector surface;
at least one flash lamp located within said opening of said housing adjacent said curved reflector and including an elongated, light-transmitting envelope having a quantity of combustible, light producing material therein, the width of said flash lamp being slightly narrower than the width of said curved reflector;
means for securing said flash lamp within said opening of said housing; and
a single lens member located on or forming part of a front portion of said housing adjacent said elongated opening and relative to said reflector to enhande on-axis and off-axis light intensity from said flash lamp upon ignition thereof within said housing, said lens including a curved, forward outer surface and a curved, rear inner surface located immediately adjacent said light-transmitting envelope of said flash lamp, said outer surface being of either aspheric or spherical configuration in cross section.

4,462,064

COMPACT BATTERY-POWERED HEADLAMP

Robert B. Schweitzer, 1501 Palm Ave., Richmond, Calif. 94805

Continuation of Ser. No. 211,752, Dec. 1, 1980, abandoned. This application Sep. 17, 1982, Ser. No. 419,590
Int. Cl.³ F21L 15/14
U.S. Cl. 362—105 1 Claim

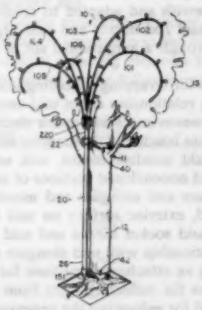
1. A headlamp assembly including a flashlight with a self-contained power supply, a headband formed to encircle the head of a user, and sleeve means having a longitudinal axis mounted to said headband for positioning said flashlight at a location proximate a side of the user's head, said sleeve means being formed for and detachably mounting said flashlight to said sleeve means, wherein the improvement in said headlight assembly comprises:
said sleeve means being mounted to said headband with the longitudinal axis of said sleeve means oriented at an angle downwardly displaced from the plane of said headband,
said sleeve means being formed with wedge means on a side of said sleeve means secured to said headband, said wedge means tapering outwardly from said headband in a rearward direction along said headband to position the front end of said flashlight proximate said band and the rear end of said flashlight outwardly of said headband and said front end to orient the light beam of said flashlight at an angle inwardly toward said headband to cause said light beam to intersect the line of sight of said user at about arm's length from said user when said headlamp assembly is worn on the head of the user and said sleeve means is positioned at a location along the side of the head and rearwardly of the user's eyes to prevent glare in the user's eyes,
said flashlight being formed with rearwardly converging side walls, and
said sleeve means being formed as a hollow rearwardly tapered sleeve dimensioned for mating receipt of said flashlight therein and frictional engagement with said side walls to effect retention and detachable mounting of said flashlight in said sleeve.

4,462,065

APPARATUS FOR DECORATIVELY LIGHTING AN OUTDOOR TREE

Robert E. Rhodes, Denver, Colo., assignor to Evergreen Specialty Company, Denver, Colo.

Filed Jul. 5, 1983, Ser. No. 510,653
Int. Cl.³ F21V 21/32; F21P 1/02
U.S. Cl. 362—250 1 Claim



1. A decorative lighting apparatus for lighting a natural outdoor tree, comprising:
a. elongate tubular means for shieldingly receiving a central electric cord means therein and for supporting other components of the lighting apparatus thereon, said elongate tubular means having a top end with a top end opening therein, a bottom end with a bottom end opening therein, and an elongate continuous cavity extending between said top end and said bottom end openings;
b. at least one adjustable bracket means for attaching said elongate tubular means in predetermined spaced relationship to a trunk portion of the tree to be lighted, said adjustable bracket means comprising:
tree sleeve means for attachment about a peripheral trunk portion of the tree;
tubular means sleeve means for attachment about a peripheral portion of said elongate tubular means;
bracket spacer means attached in selectively variable length relationship between said tree sleeve means and

said tubular means sleeve means whereby said tubular means is positionable at a preselectable distance from said tree;

c. a plurality of lighting branch means for providing a predetermined lighting configuration in the branch area of the tree to be lighted, each said lighting branch means comprising:

elongate rod means for providing structural support for said lighting branch means, said elongate rod means comprising a connection end and a free end and having a central longitudinal axis extending therebetween, said elongate rod means being constructed from a high strength relatively rigid material;

branch electric cord means for conducting electricity therethrough having a terminal end portion positioned proximate said free end of said elongate rod means, an intermediate portion extending along the length of said rod means; a tail portion extendable in spaced apart relationship from said rod means connection end in non-touching relationship with said rod means, and a terminal socket portion positioned at a terminal end at said tail portion;

a plurality of branch socket means for receiving branch light means operably connected to said branch electric cord means and positioned in equally spaced apart relationship therealong, each branch socket means comprising a central longitudinal axis extending in substantially perpendicular relationship with an associated portion of said elongate rod means central longitudinal axis;

a plurality of electric light means operably positioned in said branch socket means for providing spaced apart light sources along said branch means;

a plurality of flexible conduit means for receiving portions of said rod means and associated adjacent portions of said branch electric cord means therewithin each said conduit means adapted to extend between adjacent pairs of branch socket means in non-enclosing relationship therewith and adapted to receive associated portions of said rod means and said branch electric cord means through a longitudinal slit in a sidewall portion thereof;

wrap means for wrappingly holding said conduit means in enclosing relationship about said associated portions of said rod means and said branch electric cord means;

coating means bonded to the exterior surfaces of said wrap means, said conduit means, and said branch socket means and nonenclosed portions of said branch electric cord means and elongate rod means for providing a stiff, hard, exterior surface on said branch means for holding said socket means and said conduit means in fixed relationship with said elongate rod means and for providing an attachment medium for glitter means;

glitter means for reflecting light from said electric light means and for enhancing the appearance of said branch means;

d. branch mounting means for mounting said plurality of branch means on said elongate tubular means, said branch mounting means comprising:

a sleeve portion operably attached to a top end peripheral surface portion of said elongate tubular means proximate said upper end opening;

sleeve portion attachment means for fixedly attaching said sleeve portion to said elongate tubular means;

branch receiving means fixedly mounted in spaced apart relationship on an outer peripheral surface of said sleeve portion, said branch receiving means being adapted to receive a connector portion of an associated branch portion in selectively removeable, non-rotatable relationship therewithin;

e. tubular means electric cord means for providing electricity to said branch cord means having a plurality of tubular means cord sockets adapted to operatively mate with associated branch cord sockets said tubular means cord sockets being positioned in spaced apart relationship therealong, one above the other within said tubular means whereby said mating connection of said tubular means cord with said branch cords are enclosed within said elongate tubular means;

f. wherein said elongate tubular means is of a relatively small diameter and has a relatively non-reflective outer surface whereby said elongate tubular means is substantially less visibility prominent than said branch means when said branch light means are illuminated.

4,462,066

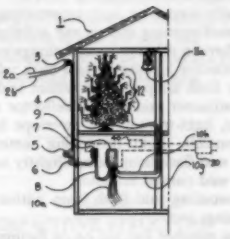
ELECTRICAL LIGHT CIRCUIT FOR DOLL HOUSE AND OTHER MINIATURE DISPLAYS

Holly S. Gibson, and Daniel J. Gibson, both of 416 Highland Ave., Westfield, N.J. 07090

Filed Apr. 13, 1981, Ser. No. 253,103

Int. Cl.[3] **F21V** *23/04;* **A63H** *33/00;* **H01H** *3/00;* **H02J** *3/00*

U.S. Cl. 362—251 **5 Claims**



1. An electrical system, which is constructed to comprise a distribution system for supplying light and power to a doll house or other miniature structure to simulate a conventional residential electrical distribution system, which comprises in combination:

an AC source of electrical power;

a step-down transformer having a primary coil connected across said source of power, and a secondary coil external to said doll house or other miniature structure, said secondary coil being connected to impose on the distribution system for said doll house or other miniature structure an energizing voltage not exceeding about 12 volts a miniaturized master breaker switch in combination with a normally open microswitch disposed in said distribution system;

a miniaturized master breaker switch comprising said master breaker housing having in its outer surface a central opening and a simulated breaker bar comprising a loop having a pair of elongated substantially parallel sides, a projection centered on and protruding from one of said elongated sides, said breaker bar mounted for partial rotation to and fro about one of said elongated sides from "off" to "on" position in said opening in operating relation to said normally-open microswitch;

said microswitch disposed in a microswitch housing substantially enclosed in said master breaker housing, and operated by a push-button protruding from the outer surface of said microswitch housing within said master breaker housing;

a spring-biased lever with one end pivoted on the outer surface of said microswitch housing, and the other end disposed, in non-operated position, adjacent said push-button;

said breaker bar being mounted so that said projection is interposed through said opening to just contact an area adjacent the other end of said spring-biased lever, whereby when said loop is rotated from a first position to a second position, said projection is caused to bear against

said spring-biased lever, causing said lever to depress said push-button to operate said microswitch;

said microswitch connected in energy transfer relation with said transformer secondary coil for turning the power between "off" and "on" positions in said secondary coil;

said distribution system including a miniaturized master panel including a master panel housing and a plurality of miniature two-way toggle switches mounted in parallel relation to one another on a surface of said master panel housing, one pole of each of said toggle switches being coupled in common circuit relation to one terminal of said secondary coil; and

the other poles of said toggle switches being respectively connected in parallel circuit relation to individual circuits constructed and arranged to lead to lighting means in different rooms or areas of said doll house or miniature structures;

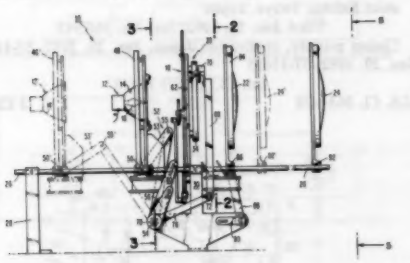
wherein the overall dimensions of each of said master breaker switch housing and said miniaturized master panel housing do not exceed about 2 inches.

4,462,067

SPOTLIGHT AND ADJUSTING SYSTEM

Charles W. C. Altman, Yonkers, N.Y., assignor to Altman Stage Lighting Co., Inc., Yonkers, N.Y.

Filed Apr. 8, 1983, Ser. No. 483,282
Int. Cl.³ F21V 7/00
U.S. Cl. 362—268 **11 Claims**



1. An improved spotlight adjusting system for controlling the beam of a spotlight, comprising:

a base stucrture,

a reflector-lamp assembly means mounted on said structure for collecting light rays and directing them to a focal area,

iris means mounted on said structure spaced from said reflector-lamp assembly means for selectively controlling the passage of light rays from said focal area,

lens means mounted on said structure for focusing said light rays from said iris means into a light beam directed by said lens means to an area remote from said spotlight system,

said reflector-lamp assembly means being movable to a plurality of positions between a forward position and a rearward position, said forward position being nearer to said iris means than said rearward position, said focal area being aligned with said iris means in said forward position and spaced from said iris means in said rearward position,

iris control means for independently adjusting the area of the aperture of said iris means for passing light rays from said focal area to said lens means, and

reflector-lamp control means for independently adjusting said reflector-lamp means to a selected position of any of said plurality of positions between said forward and rearward positions,

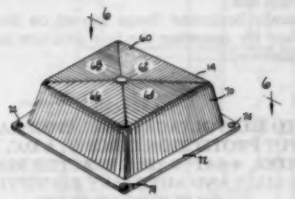
said iris control means and said reflector-lamp control means being capable of being operated in combination to pass either all the light rays or a selected portion of the light rays passing through said focal area from said reflector-lamp assembly means at any said selected position to said lens means.

4,462,068

LUMINAIRE WITH IMPROVED LENS STRUCTURE

Jan Shadwick, Newark, Ohio, assignor to Manville Service Corporation, Denver, Colo.

Filed Jun. 24, 1982, Ser. No. 391,666
Int. Cl.³ F21V 5/00
U.S. Cl. 362—332 **8 Claims**



1. A lens structure for a lighting fixture, comprising:

a generally horizontal first lens surface divided into four triangular shaped quadrants, said first lens surface having formed thereon means for refracting a beam of light downwardly and outwardly in a predetermined pattern to form a beam having a cross section approximating the predetermined pattern at a predetermined distance below the lens;

said refracting means including:

prismatic refractor elements in each quadrant, the refractive elements of each quadrant extending parallel to the bisector of each triangular shaped quadrant;

light diffusing elements positioned between the prismatic refractor elements; and

said first lens surface prismatic refractor elements being formed at the angle according to the following tabulation and said light diffusing elements being formed at the radius according to the following tabulation:

Prism Element	Angle	Radius
1	53.8°	
2		.243"
3	54.7°	
4		.243"
5	55.4°	
6		.243"
7	56.3°	
8		.243"
9	57.2°	
10		.243"
11	58°	
12		.243"
13	59°	
14		.243"
15	60°	
16		.243"
17	60.9°	
18		.243"
19	61.7°	
20		.243"
21	62.5°	
22		.243"
23	63.3°	
24		.243"
25	64°	
26		.243"
27	64.8°	
28		.243"
29	65.7°	
30		.243"
31	66.5°	
32		.243"
33	67.2°	

-continued

Prism Element	Angle	Radius
34		.243"
35	67.9°	
36		.243"
37	68.6°	

a generally vertical second lens surface formed on the first lens surface and around the periphery thereof and having formed thereon means to diffuse a beam of light outwardly; and

a generally horizontal flange formed on the second lens surface for mounting the lens structure in the lighting fixture.

4,462,069

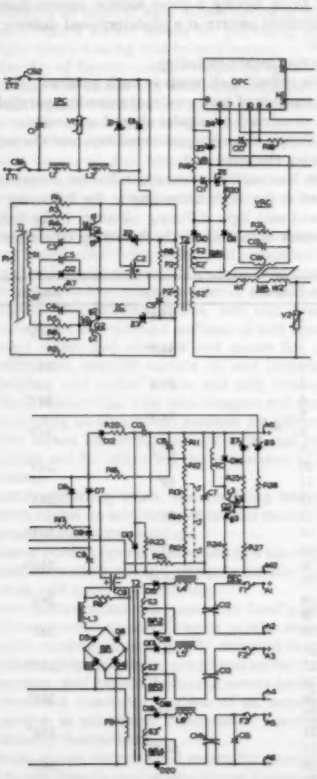
D.C. TO D.C. VOLTAGE REGULATOR HAVING AN INPUT PROTECTION CIRCUIT, A D.C. TO D.C. INVERTER, A SATURABLE REACTOR REGULATOR, AND MAIN AND AUXILIARY RECTIFYING AND FILTERING CIRCUITS

Raymond Becky, McMurray, Pa., assignor to American Standard Inc., Swissvale, Pa.

Filed Aug. 14, 1981, Ser. No. 293,042

Int. Cl.³ H02P 13/22

U.S. Cl. 363—23 **8 Claims**



1. A d.c. to d.c. voltage regulator comprising, a pair of input terminals connectable to a source of d.c. voltage, a protection circuit including transient suppressing means connected to said pair of input terminals, a d.c. to a.c. inverting circuit connected to the output of said protection circuit, said d.c. to a.c. inverting circuit producing a.c. signals which are transformer coupled to the input of a saturable reactor regulating circuit, said saturable reactor regulating circuit having its output coupled to a pair of main output terminals by a rectifying circuit and coupled to a plurality of auxiliary output terminals by a transformer rectifying circuit, and said saturable reactor regulating circuit having a sampling circuit coupled to said pair of main output terminals for sensing the output voltage and for controlling said saturable reactor regulating circuit whereby the output voltage across said pair of main output terminals as well as the output voltages across the plurality of auxiliary output terminals are maintained at a constant level, and an overvoltage protection circuit including a switching transistor and a two-input OR gate, said two-input OR gate includes a first zener diode and pair of resistors for sensing an overvoltage condition across said pair of input terminals and includes a second zener diode and pair of resistors for sensing an overvoltage condition across said pair of main output terminals and for rendering said switching transistor conductive to energize a circuit breaker which opens electrical contacts connected to said pair of input terminals for deenergizing the d.c. to d.c. voltage regulator when an overvoltage condition exists across said pair of input terminals or exists across said pair of output terminals.

4,462,070

DC-DC CONVERTER PROVIDED WITH AN AC LINK

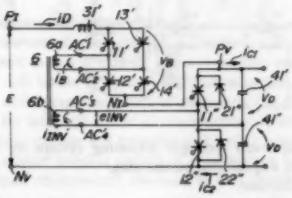
Katsuji Iida, Atsugi, Japan, assignor to Toyo Denki Seizo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 10, 1982, Ser. No. 386,942

Claims priority, application Japan, Jan. 29, 1982, 57-11684; Jan. 29, 1982, 57-11685

Int. Cl.³ H02D 13/18

U.S. Cl. 363—28 **3 Claims**



1. A DC—DC converter provided with an AC link comprising an AC line voltage commutation excitation current type inverter having a smoothing reactor and a number of controlled rectifiers, and a voltage type inverter having a number of controlled rectifiers, feedback rectifiers for said controlled rectifiers and smoothing capacitors connected between DC terminals of the voltage type inverter, the improvement lies in that DC terminals of said AC line voltage commutation excitation current type inverter and DC terminals of said voltage type inverter are connected in series, and that respective AC terminals of these inverters are coupled via a transformer.

4,462,071

SUPPLY SYSTEM

Huibert Blok, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 18, 1982, Ser. No. 389,535

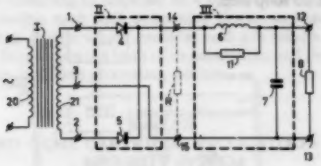
Claims priority, application Netherlands, Jun. 25, 1981, 8103063

Int. Cl.³ H02M 1/12

U.S. Cl. 363—44 **22 Claims**

1. An electrical power supply system comprising, a rectifier circuit having input terminals for connection to a source of

alternating voltage or current, a load, and a smoothing filter coupling output terminals of said rectifier circuit to said load, the combination of said smoothing filter and said load being



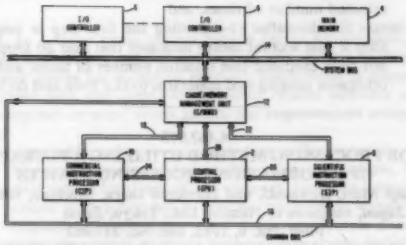
chosen so that the input impedance of said smoothing filter is substantially real for the overall frequency spectrum applied to said filter by said rectifier circuit and has substantially the same value for each component of said frequency spectrum.

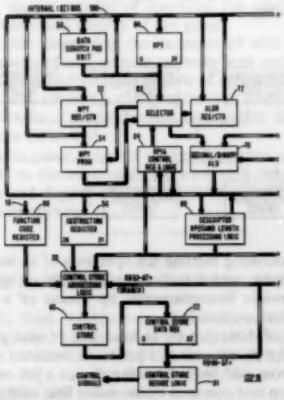
4,462,072

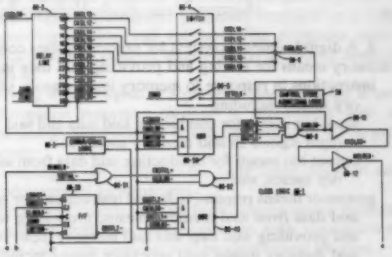
CLOCK SYSTEM HAVING A STALL CAPABILITY TO ENABLE PROCESSING OF ERRORS

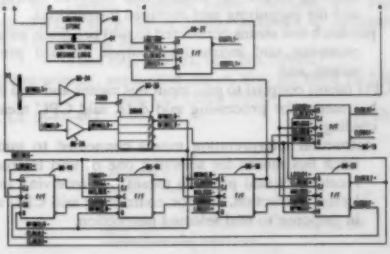
Steven A. Tague, Billerica, and Virendra S. Negi, Pepperell, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Apr. 3, 1981, Ser. No. 250,810
Int. Cl.³ G06F 7/00, 11/00
U.S. Cl. 364—200 **8 Claims**









1. A data processing system includes a memory subsystem for storing information and a commercial instruction processor (CIP) for executing decimal numeric instructions, both coupled to a common bus, said CIP comprising:

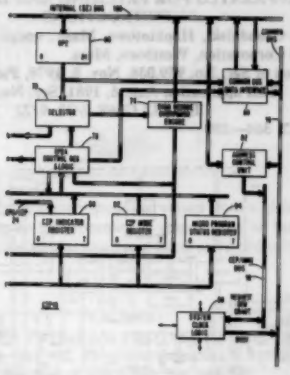
clocking system means for generating a plurality of timing signals for timing the logic elements of said CIP,

wherein said clocking system means includes:

delay line means for generating a square wave clock delay signal,

NAND gate means coupled to said delay line means for generating an inverted square wave clock delay signal, said delay line means being responsive to and delaying said inverted square wave clock delay signal by a second predetermined period of time for generating said square wave clock delay signal, and

timing means responsive to said inverted square wave clock delay signal for generating said plurality of timing signals;



means for stalling said clocking system means, for stalling said CIP during a transfer of said information between said memory subsystem and said CIP, said CIP being responsive to a grant signal from said memory subsystem for indicating that the transfer of said information is complete, said stalling means being responsive to said grant signal for enabling said clocking system means; and

error processing means responsive to one of a plurality of error signals from said memory subsystem indicative of an error

condition sensed during the transfer of said information for stalling said clocking system means after one clock cycle to enable said CIP to condition control store means for processing said error condition, said clocking system means again being enabled after a first predetermined period of time.

4,462,073

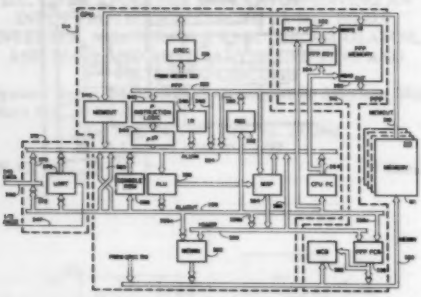
APPARATUS FOR FETCHING AND DECODING INSTRUCTIONS

David Grondalski, Hopkintown, Mass., assignor to Data General Corporation, Westboro, Mass.

Division of Ser. No. 959,038, Nov. 8, 1978, Pat. No. 4,316,244. This application Aug. 6, 1981, Ser. No. 290,454

Int. Cl.³ G06F *9/38, 9/22*

U.S. Cl. 364—200 **22 Claims**



1. A digital computer system for processing data comprising:

memory means for storing and providing said data including instructions in response to memory input signals, said memory means including

input bus means for conducting said data and said memory input signals to said memory means and

output bus means for conducting said data from said memory means; and

processor means responsive to said instructions for receiving said data from said memory means, processing said data, and providing said data and said memory input signals to said memory means, said processor means including

pre-fetch means coupled to said input bus means and said output bus means for providing said memory input signals specifying said instructions to said memory means, for receiving said instructions output from said memory means, for storing said received instructions, and for outputting said received instructions,

pre-fetch bus means connected to said pre-fetch means for receiving said instructions output by said pre-fetch means, and

CPU means coupled to said input bus means and said output bus means for processing said data, said CPU means including

instruction interpretation means connected to said pre-fetch bus means for selecting one of said instructions received in said prefetch means, for receiving said selected instruction, and for controlling said CPU means in response to said selected instruction.

4,462,074

DO LOOP CIRCUIT

Yosef Linde, Needham, Mass., assignor to Codex Corporation, Mansfield, Mass.

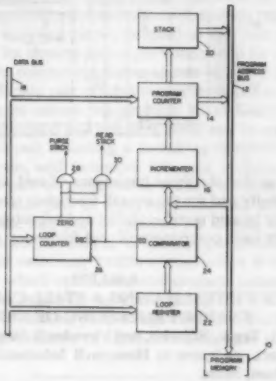
Filed Nov. 19, 1981, Ser. No. 322,955

Int. Cl.³ G06F *9/06*

U.S. Cl. 364—200 **9 Claims**

1. In data processing apparatus for executing the steps of a program, said apparatus having a program memory means, a combination for executing a selected number of times the steps of a do loop within said program comprising:

first means for determining, while each do loop step is being executed, whether it is the final step in said do loop without decoding any part of the instruction associated with said do loop step,



second means for determining, during each execution of said final step, whether said do loop has been executed said selected number of times, and

means for thereafter re-executing the first step in said do loop if said second means indicates that said do loop has not been executed said selected number of times, and for otherwise causing said apparatus to exit from said do loop.

4,462,075

JOB PROCESSING METHOD UTILIZING A PLURALITY OF INFORMATION PROCESSING DEVICES

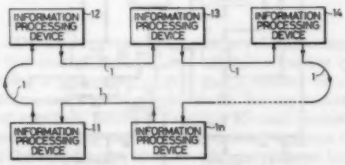
Kinji Mori, Kawasaki, and Hirokazu Ihara, Machida, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 6, 1982, Ser. No. 337,452

Claims priority, application Japan, Jan. 21, 1981, 56-6398

Int. Cl.³ G06F *15/16*

U.S. Cl. 364—200 **10 Claims**



1. A job processing method for operation of an information processing system which includes a plurality of information processing devices interconnected by means of a common transmission line, comprising:

a first step of detecting by at least one of said processing devices the occurrence of a job to be executed and transmitting from said one processing device a job occurrence message on said common transmission line, said job occurrence message including job content information characterizing the job to be executed;

a second step of receiving said job occurrence message from said transmission line at least at one of said plurality of processing devices other than the one processing device which has transmitted said message and storing said job content information in the processing device or devices which have received said job occurrence message; and

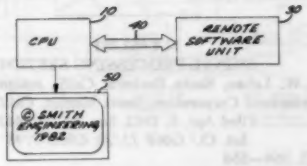
a third step of starting the execution of said job, which is identified by stored job content information, in a candidate processing device selected from candidate processing devices including the processing device which has transmitted said job occurrence message and said processing devices receiving said job occurrence message, said selection occurring in response to a selection process carried out within each such processing device so that the processing device which executes said job selects itself for this function on the basis of its capabilities and those of the other candidate processing devices.

4,462,076

VIDEO GAME CARTRIDGE RECOGNITION AND SECURITY SYSTEM

Jay Smith, III, Pacific Palisades, Calif., assignor to Smith Engineering, Culver City, Calif.

Filed Jun. 4, 1982, Ser. No. 384,906
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—200 **17 Claims**



1. In a video game system having means for displaying a game including a central processing unit (CPU); a display screen; means for accepting operator instructions in response to game play, and means for receiving remote software units storing one or more video games, the improvement comprising:

a removable software unit including a first memory unit having a plurality of addressable memory locations, predetermined locations of the memory locations being encoded with a first set of specific information signals for displaying a proprietary visual display at separate discrete and independent locations on the display screen and other memory locations being encoded with specific information signals capable of operating the video game system for the visual display of the game;

means for identifying the contents of said predetermined locations of said remote software unit and verifying said first set of information signals as acceptable to the CPU;

means for requiring the proprietary visual display to be shown for a predetermined time period after acceptance by the CPU; and

means for passing control of the video game system from the CPU to the removable software unit only after verification and display of the proprietary visual display on the display screen.

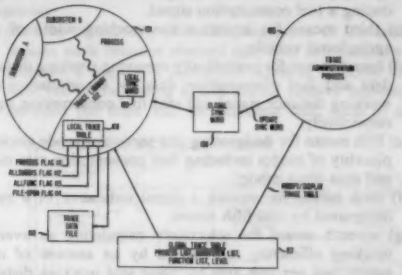
4,462,077

TRACE FACILITY FOR USE IN MULTIPROCESSING ENVIRONMENT

Harold L. York, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 24, 1982, Ser. No. 391,699
Int. Cl.³ G06F *11/00*
U.S. Cl. 364—300 **12 Claims**

1. In a multiprocessing computer environment wherein several processes are simultaneously executing on a single processor, at least one process having calls to a trace library to provide an output when the arguments accompanying a call satisfy a predetermined criteria with respect to parameters within a table that is local to said at least one process, a computer method of controlling the execution of the trace statements within said at least one process comprising the steps of comparing a local word within the process with a global word available to all processes, and replacing the parameters in the



local table with their corresponding values from a global table that is available to all processes in response to an indication that a difference exists between said local word and said global word.

4,462,078

COMPUTER PROGRAM PROTECTION METHOD

Ron Ross, P.O. Box 175, Princeton Junction, N.J. 08550

Filed Aug. 2, 1982, Ser. No. 404,135
Int. Cl.³ G06F *9/00*
U.S. Cl. 364—300 **3 Claims**

1. In a computer program protection method intended to distinguish between computer programs recorded on a bona fide recording medium and corresponding programs copied from such bona fide medium onto a similar recording medium, the steps of:

a. Writing a code signal at a predetermined location in said information recording medium in accordance with an instruction incorporated within the program to be protected;

b. Verifying in the computer the code signal stored at said predetermined location; and

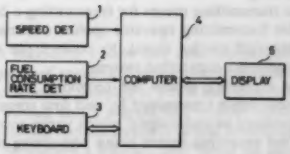
c. The step of utilizing as said bona fide recording medium, a medium which is unresponsive to such instruction to write said code signal at said predetermined location.

4,462,079

APPARATUS FOR PROVIDING INFORMATION FOR AGRICULTURAL WORK MACHINE

Osamu Ito, Toyota; Nobuhito Hobo, Inuyama, and Tetsuya Nakamura, Chiryu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 1, 1981, Ser. No. 298,517
Claims priority, application Japan, Sep. 11, 1980, 55-126831
Int. Cl.³ G08B *19/00*
U.S. Cl. 364—442 **10 Claims**



1. Apparatus for providing information for an agricultural work machine of the type including a fuel consuming prime mover, comprising:

(a) first means for detecting the working distance of an agricultural vehicle and producing a working distance signal;

(b) second means for detecting the amount of fuel consumed by said prime mover of said agricultural vehicle and producing a fuel consumption signal;

(c) third means for inputting the working width of said agricultural vehicle;

(d) fourth means for periodically renewing working distance data and fuel consumption data by accumulating said working distance signal and said fuel consumption signal respectively;

(e) fifth means for designating one particular mode among a plurality of modes including fuel consumption rate mode and data input mode;

(f) sixth means for storing a signal indicative of a mode designated by said fifth means;

(g) seventh means for selectively calculating an average working efficiency represented by an amount of consumed fuel per unit area by using said working distance data, fuel consumption data and working width data when the signal stored in said sixth means indicates said fuel consumption rate mode; and

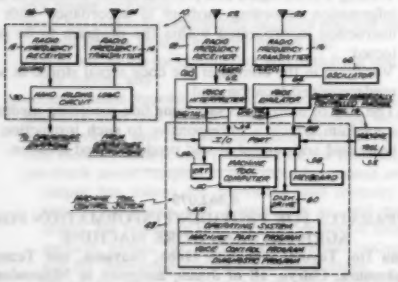
(h) eighth means for displaying said average working efficiency with a display mode being switched from another information display mode to working efficiency display mode in receipt of an average working efficiency information from said seventh means.

4,462,080

VOICE ACTUATED MACHINE CONTROL

Richard Johnstone, and Edward E. Kirkham, both of Brookfield, Wis., assignors to Kearney & Trecker Corporation, West Allis, Wis.

Filed Nov. 27, 1981, Ser. No. 325,325
Int. Cl.³ G10L *1/00*; G06F *3/00*
U.S. Cl. 364—513.5 **11 Claims**



1. Apparatus for enabling a human operator to control the operation of a computer controlled system in accordance with voice commands and to receive audible information therefrom indicative of computer controlled system operating conditions comprising:

first transmitting means for transmitting a carrier signal, and for transmitting operator spoken commands by modulating said carrier signal, to control the operation of the computer controlled system;

first receiving means for receiving said operator-spoken commands transmitted by said first transmitting means to produce an audio signal which varies accordingly and said first receiving means being responsive to the absence of said carrier signals from said first transmitting means and in the absence of said carrier signals from said first transmitting means, said first receiving means supplying an output signal to the computer controlled system to cause the computer controlled system to cease operation;

voice interpreter means coupled to said first receiving means for converting said audio signals supplied from said first receiving means into digital signals which are supplied to the computer controlled system to control the operation thereof;

voice synthesizer means adapted to receive digital signals generated by the computer controlled system in response to digital signals supplied to the computer controlled system from said voice interpreter means and in response to deviations of computer controlled system operation, said voice synthesizer means translating the digital signals supplied from the computer controlled system into audio signals corresponding to synthesized speech phrases indicative computer controlled system operating conditions;

second transmitter means coupled to said voice synthesizer means for transmitting signals varying in accordance with said audio signal received from said voice synthesizer means; and

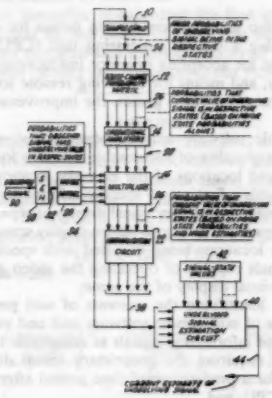
second receiver means for receiving said signals transmitted from said second transmitter means to provide the operator with audible information in the form of speech phrases indicative of the operating conditions of the computer controlled system.

4,462,081

SIGNAL PROCESSING SYSTEM

Frank W. Lehan, Santa Barbara, Calif., assignor to System Development Corporation, Santa Monica, Calif.

Filed Apr. 5, 1982, Ser. No. 365,442
Int. Cl.³ G06F *15/20*; G06G *7/48*
U.S. Cl. 364—554 **12 Claims**



1. A signal processing system for generating a probability distribution indicative of the current underlying value of a time-varying source, said system comprising:

state change probability matrix means defining the probabilities of all possible state-to-state changes in a source capable of assuming any of a finite number of states, wherein said probability matrix means provides as an output a set of probabilities relating to the current source state, derived from a corresponding set of probabilities relating to the effect of noise on a related observed signal at present and prior sample times;

noise model means for generating a set of probabilities that an observed value of the time-varying signal would have occurred if the underlying value of the source were in each of its possible states; and

means for combining the set of probabilities generated by said probability matrix means with the set of probabilities generated by said noise model means, to yield the desired probability distribution, which is then fed back to said

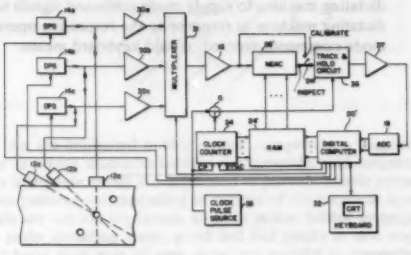
probability matrix means for generation of a set of probabilities with respect to the next sample time.

4,462,082

AUTOMATIC CALIBRATION SYSTEM FOR ULTRASONIC INSPECTION

Alfred W. Thiele, Canoga Park; Robert E. McLain, Woodland Hills; Modesto T. Martinez, Jr., Duarte; Richard C. Lewis, Santa Monica, and Michael S. Kim, Canoga Park, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 17, 1981, Ser. No. 303,230
Int. Cl.³ G01N *29/04*
U.S. Cl. 364—571 **8 Claims**



5. Apparatus for calibrating with a test block having holes at known depths, the sensitivity of an ultrasonic system for nondestructive inspection of structural material so that a flaw produces a return signal of the same amplitude independent of its depth in the material, comprising

means for receiving ultrasonic return signals from said calibration holes in said test block of the material with said system in a calibration mode during which no calibrating correction is applied to ultrasonic return signals,

means for storing as a function of transit time peak amplitudes of said return signals returned from said calibration holes separately while in said calibration mode,

means for determining the equation of a signal amplitude curve as a function of transit time that best fits said peak amplitudes and known depths of said calibration holes,

means for determining a set of values from said equation for a number of evenly spaced points over a predetermined range of depths through said test block, and

means for applying the reciprocals of said values to ultrasonic return signals from corresponding depths as correction functions to ultrasonic return signals during nondestructive inspection of the structural material.

4,462,083

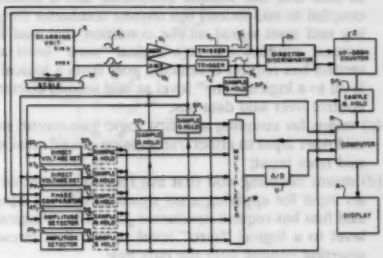
METHOD OF INTERVAL INTERPOLATION

Ernst Schwefel, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Jun. 24, 1981, Ser. No. 276,978
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1980, 3024716
Int. Cl.³ G06F *15/353*
U.S. Cl. 364—577 **8 Claims**

1. In a position measuring system comprising a measuring scale, a scanning unit for scanning the scale and generating at least two periodic analog signals in response to relative movement between the scale and the scanning unit, an evaluating arrangement for processing the analog signals, means for generating digital signals corresponding to the analog signals, and an interpolating arrangement, included in the evaluating arrangement and responsive to the digital signals, which comprises a computer for computing interpolation values within a signal period of the periodic analog signals, wherein the computer comprises means for correcting the digital signals prior to the computation of interpolation values by use of a plurality of previously determined correction values in order to improve accuracy of the interpolation values, the improvement comprising:

a plurality of detector elements responsive to the analog signals, each detector element operative automatically to generate a respective correction signal in response to at least one of the analog signals during relative movement between the scale and the scanning unit, each of said



correction signals indicative of a respective signal parameter characteristic of at least one of the analog signals and chosen from the group consisting of: direct voltage component, amplitude, and phase difference of the analog signals and

means for providing the correction signals as the correction values to the computer;

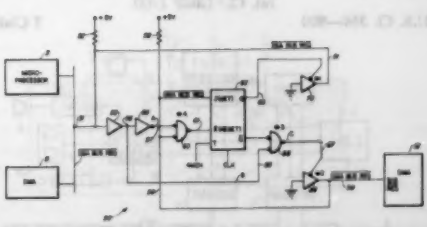
said detector elements and providing means cooperating automatically to determine and supply the correction values to the computer.

4,462,084

BUS REQUEST BUFFER CIRCUIT FOR INTERFACING BETWEEN FIELD MAINTENANCE PROCESSOR AND DEVICE SPECIFIC ADAPTOR

Edward H. Greenwood, Phoenix, Ariz., assignor to Gen Rad, Inc., Mass.

Filed Feb. 23, 1981, Ser. No. 236,886
Int. Cl.³ G06F *3/04*
U.S. Cl. 364—900 **8 Claims**



1. In a system including a data bus and first and second circuits each capable of exerting control over said data bus, a first bus request conductor coupled to a first bus request terminal of said first circuit and a second bus request conductor coupled to a second bus request terminal of said second circuit, said first circuit producing a logical "one" level on said first bus request terminal when said first circuit asserts control over said data bus, said second circuit producing a logical "one" level on said second bus request terminal when said second circuit asserts control over said data bus, said first circuit including means to monitor the level of said first bus request terminal and determine that there is a logical "zero" level

thereon before asserting control over said data bus, said first circuit producing no output signal indicative of whether said first circuit is driving or monitoring said first bus request terminal on any terminal other than said first bus request terminal, a buffer circuit for interfacing between said first and second circuits comprising in combination:

(a) flip-flop means for storing a logical "one" in response to a set signal and a logical "zero" in response to a reset signal, said flip-flop means having a set input and a reset input;

(b) first logic gate circuit means having a first input coupled to said first bus request conductor and a second input coupled to said second bus request conductor for producing said reset signal on the condition that said first bus request conductor is at a logical "zero" level and said second bus request conductor goes from a logical "zero" level to a logical "one" level as said second circuit asserts control over said data bus;

(c) means for coupling said first logic gate circuit means to said reset input to effect transmission of said reset signal to said reset input;

(d) means coupling said first bus request conductor to said set input for applying a set signal to said set input when said first bus request conductor goes from a logical "one" level to a logical "zero" level as said first circuit stops asserting control over the data bus;

(e) second logic gate means coupled to a first output of said flip-flop means for producing a logical "one" level on said second bus request conductor when a logical "one is stored in said flip-flop means and no circuit is asserting control over said data bus;

(f) third logic gate means coupled to a second output of said flip-flop means and said first bus request conductor for producing a logical "one" on said first bus request conductor on the condition that a logical "one" is stored in said flip-flop means and a logical "one" is produced on said second bus request conductor as said second circuit asserts control over said data bus.

4,462,085

WORD PROCESSOR FOR CONTROLLING AN EXTERNAL DICTATING MACHINE

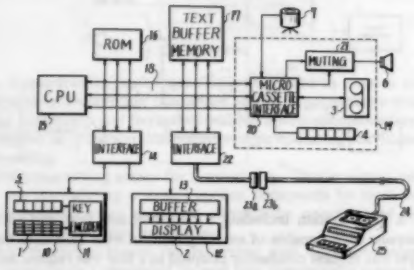
Senji Yamamoto, Yokohama, and Kihee Yamamoto, Sagamihara, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 9, 1981, Ser. No. 328,854

Claims priority, application Japan, Dec. 16, 1980, 55-180513[U]

Int. Cl.³ G06F *1/00*

U.S. Cl. 364—900 **7 Claims**



1. A word processor device for preparing and editing a textual document and for use in connection with an external dictating machine for transcribing textual subject matter orally recorded on the dictating machine, the latter having a plurality of operating modes which can be selected by means of a device external thereto coupled by a multi-wire cable to the dictating machine, the word processor device comprising:

keyboard means for entering textual data and having a plurality of keys associated with typing characters, with at least some of said keys being selectively actuable to enter respective dictating machine operating mode commands to control the operation of said dictating machine in said modes;

processor means connected to said keyboard means for receiving the textual data and commands entered on said keyboard means, and having a text buffer memory means for temporarily storing said textual data;

character display means connected to said processor means for displaying at least a portion of the textual data stored in said text buffer memory means;

dictating machine interface means connected to said processor means; and

a multi-wire cable for connecting said interface means to the dictating machine to supply mode command signals to the dictating machine in response to the respective operating mode commands entered on said keyboard means.

4,462,086

LOADING SYSTEM IN NUMERICAL CONTROLLER

Mitsuo Kurakake, Hino, Japan, assignor to Fanuc Ltd., Tokyo, Japan

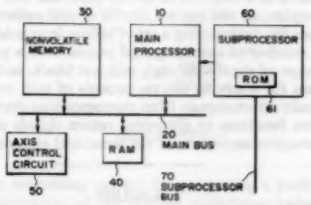
PCT No. PCT/JP81/00245, 371 Date May 26, 1982, 102(e) Date May 26, 1982, PCT Pub. No. WO82/01265, PCT Pub. Date Apr. 15, 1982

PCT Filed Sep. 21, 1981, Ser. No. 385,392

Claims priority, application Japan, Sep. 30, 1980, 55-136468

Int. Cl.³ G06F *1/00*; G05B *19/18*

U.S. Cl. 364—900 **1 Claim**



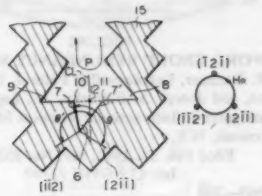
1. A loading system method for a numerical controller provided with a main processor for performing data processing for numerical control, a sub-processor for easing the load on the main processor, said sub-processor having a ROM incorporated therein, a nonvolatile memory connected to a main bus of the main processor for storing a control program, and a write/-read RAM connected to the main bus of the main processor, said method comprising the steps of: storing in the ROM incorporated in the sub-processor a loading program for transferring the control program stored in the nonvolatile memory to the RAM; at the time of turning ON the numerical controller, using the main processor to read the loading program out of the ROM and then transferring the loading program to the RAM; and executing the loading program transferred to the RAM by the main processor in order to transfer the control program stored in the nonvolatile memory to the RAM.

4,462,087

ION-IMPLANTED BUBBLE DEVICE

Yoshio Satoh, Yokohama; Makoto Ohashi, Kawasaki; Tsutomu Miyashita, Inagi; Kazuo Matsuda, and Kazunari Komenou, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawsaki, Japan

Filed Feb. 22, 1983, Ser. No. 468,707
Claims priority, application Japan, Feb. 22, 1982, 57-25995; Apr. 28, 1982, 57-70204
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—36 5 Claims



1. An ion-implanted bubble device comprising a magnetic layer in which magnetic bubbles are movable, said magnetic layer being selectively ion-implanted to provide bubble propagation patterns corresponding to regions of the magnetic layer which are not ion-implanted, so as to define bubble propagation paths including super, good and bad tracks in said magnetic layer with axes of easy stripe out parallel to respective ones of said good tracks around the bubble propagation patterns, wherein

each of said bubble propagation paths has a plurality of substantially U-shaped turns and is folded back along the direction of a respective good track which is, in turn, parallel to a respective easy axis of stripe out in the magnetic layer,

said substantially U-shaped turns of each said bubble propagation path include at least one inside turn,

said at least one inside turn of each said bubble propagation path including at least one turn cusp which is substantially V-shaped, wherein tips are provided between said each said turn cusp and the neighboring cusps on the bubble transfer-in side and on the bubble transfer-out side, respectively,

the summits of each said turn cusp and said neighboring cusps being arranged so that each said summit cannot be seen through from the neighboring cusp, and

the summit of said at least one turn cusp deviates toward the direction of bubble propagation with respect to a center line of the respective turn cusp extending in parallel to a respective easy axis of stripe out and passing through the mid-point of a line connecting the tips of the respective turn cusp.

4,462,088

ARRAY DESIGN USING A FOUR STATE CELL FOR DOUBLE DENSITY

Sylvester W. Giuliani, Wappingers Falls, and SeJung Park, Newburgh, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 3, 1981, Ser. No. 317,721
Int. Cl.³ G11C *11/36, 17/06*
U.S. Cl. 365—105 6 Claims

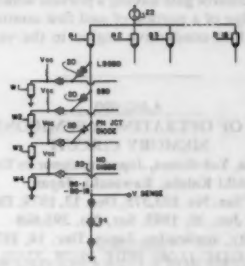
1. A semiconductor integrated circuit read-only storage system comprising:

a storage array of cells having groups of word lines and bit lines, and including an asymmetrically conductive output device;

each cell consisting of a two-electrode asymmetrically conductive device, or no device, each of said asymmetrically conductive devices having between its two electrodes a predetermined one of three different non-linear VI characteristics such that, when each of said cell devices conducts current of substantially the same magnitude, four readily sensed differences in forward voltage levels are provided by said cells when addressed on said word lines and bit lines of said array;

three of said forward voltage levels being selectively available across the two respective electrodes of said cell devices, the other forward voltage level being available across said output device when a no device cell is selected;

each cell device having its two electrodes directly connected to at least one word line and at least one bit line respectively;



a constant current source for selectively supplying said current of substantially the same magnitude to each of the asymmetrically conductive devices of said cells and to said output device;

means for applying input signals to said word and bit lines;

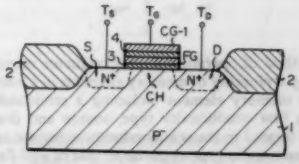
sensing means for sensing the four distinct forward voltage levels of said cells responsive to said input signals, including a bit sense line connected in common to one electrode of each of said cell devices and to said output device.

4,462,089

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE

Takashi Miida, Tokyo; Yoshihiko Hika, and Akira Takei, both of Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 16, 1981, Ser. No. 331,286
Claims priority, application Japan, Dec. 29, 1980, 55/185336
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—185 13 Claims



1. A nonvolatile semiconductor memory device comprising:

a semiconductor substrate of a first conductivity type;

two impurity regions of a second conductivity type formed in said semiconductor substrate spaced apart from each other;

a floating gate of a semiconductor formed above said semiconductor substrate and between said two impurity regions, said floating gate being insulated from said semiconductor substrate and comprising first and second conductive regions having conductivity types opposite to each other and providing a junction therebetween;

a first control gate formed above said first conductive region of said floating gate and insulated therefrom;

a second control gate formed above said second conductive

region of said floating gate and insulated from said floating gate and said first control gate;

writing and erasing means for applying write voltages to said first and second control gates and said impurity regions to cause avalanche breakdown in said substrate so that hot carriers reach said first region of said floating gate for writing information, and for applying pulse-trains of an erase voltage to said first control gate while grounding said second control gate to cause avalanche breakdown in said floating gate so that hot carriers cross said junction and reach said first control gate for erasing said information; and

said second control gate having a portion which rises up and over an edge of a portion of said first control gate that is over said first conductive region in the vicinity of said junction.

4,462,090

METHOD OF OPERATING A SEMICONDUCTOR MEMORY CIRCUIT

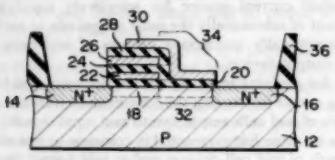
Hisakazu Iizuka, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

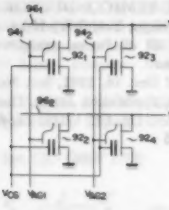
Continuation of Ser. No. 103,375, Dec. 13, 1979. This application Jun. 30, 1982, Ser. No. 393,608

Claims priority, application Japan, Dec. 14, 1978, 53-153741

Int. Cl.³ G11C *11/40*; H01L *29/78, 27/02, 29/04*

U.S. Cl. 365—185 **2 Claims**





1. A method of operating a semiconductor memory circuit comprising: a plurality of memory elements in a matrix fashion with each memory element including a semiconductor substrate of a first conductivity type, source and drain regions which are formed in the semiconductor substrate and are of a second conductivity type opposite to that of said first conductivity, a first gate insulation layer formed on the major surface of said substrate, corresponding to a channel region between said source and drain, a first gate electrode acting as a floating gate electrode formed on said first gate insulation layer, the first gate electrode located nearer said source region than said drain region, a second gate insulation layer formed on said first gate electrode, a second gate electrode acting as a control gate electrode formed on said second gate insulation layer so as to partially overlap said first gate electrode, a third gate insulation layer formed on said second gate electrode, and a third gate electrode acting as an addressing gate electrode formed on said third gate insulation layer, extending to a portion of said channel region not covered by said first and second electrodes, wherein said second gate electrodes of said semiconductor memory elements are commonly connected to one another, the drain regions of said memory elements arranged on a row/column of said matrix are commonly connected to one another, said third gate electrodes of said memory elements arranged on a column/row are commonly connected to one another including the steps of:

applying, in advance of applying data write signals, a fixed voltage to said second gate electrode of each of said memory elements in the write mode for writing data into said respective memory elements; and applying pulse voltages as the data writing signals to the drain region and said third gate electrodes of the memory element, respectively, to be selected at a write timing.

4,462,091

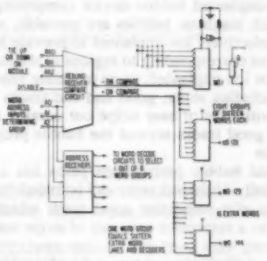
WORD GROUP REDUNDANCY SCHEME

Ronald W. Knepper, Lagrangeville; Peter J. Ludlow, Hopewell Junction, and Joseph A. Petrosky, Jr., Lagrangeville, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 26, 1982, Ser. No. 352,916

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—200 **7 Claims**



1. A word redundancy scheme for a random access memory arrangement wherein the bit output stage uses on-chip logic, comprising:

an array of word group decoders for a non-redundant portion of said memory and an array including at least one word group decoder for a redundant portion of said memory, each having an additional emitter;

a compare circuit having input means and output means;

means coupled to said compare circuit input means for applying a first set of address inputs representing word decoder locations in said non-redundant portion to be accessed, and a second set of address inputs representing defective bit address locations in said non-redundant memory portion; and

means coupling said compare circuit output means to each of said additional emitters wherein when said first and said second sets of address inputs coincide, said decoders for a non-redundant portion are deselected and said decoders for said redundant portion are selected.

4,462,092

ARC SCAN ULTRASONIC TRANSDUCER ARRAY

Masami Kawabuchi, Yokohama; Junichi Satoh, Isehara; Fumio Muramatsu, and Koetsu Saitoh, both of Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed May 14, 1981, Ser. No. 263,739

Claims priority, application Japan, May 15, 1980, 55-64789

Int. Cl.³ G01S *15/89*; H01L *41/10*

U.S. Cl. 367—105 **9 Claims**

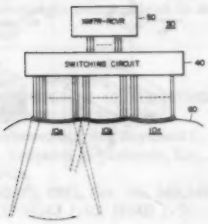
1. An ultrasonic transducer array comprising:

a curved support having a pair of bridged parallel members convex in the direction of propagation of acoustic energy;

a plurality of successively arranged elongated transducers

each comprising a piezoelectric electric element having a width expansion vibrational characteristic supported between said bridged parallel members, and a pair of first and second electrodes attached to the opposite sides and across the thickness thereof for connection to a transducer control circuit to generate said acoustic energy;

an impedance matching layer of a resilient material presenting a convex surface for radiating said acoustic energy; and



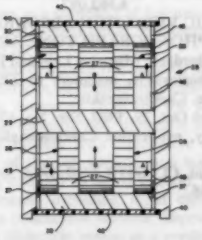
a plurality of impedance matching elements corresponding to said transducers and secured between the corresponding transducers and said impedance matching layer to reduce acoustic interference between adjacent transducers and having a higher acoustic impedance than the acoustic impedance of said impedance matching layer to form a double-layered impedance matching structure with said layer to provide impedance matching between a human body and said transducers.

4,462,093

SYMMETRICAL SHELL SUPPORT FOR FLEXTENSIONAL TRANSDUCER

Ralph G. Upton, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Jun. 28, 1982, Ser. No. 392,496
Int. Cl.³ H04R 17/00
U.S. Cl. 367—165 **1 Claim**



1. In a flextensional transducer having a hollow shell which is oval in cross-section and has two open ends, a pair of cover flanges disposed over respective ones of the ends to close the ends with an air gap between the cover flanges and the ends of the shell to allow the transducer to vibrate, a sealing boot disposed over the shell and connecting the cover flanges to seal the transducer, and a stack of driving elements disposed between opposed walls on the inside of the shell for vibrating the shell in response to a signal applied thereto, the improvement to permit higher power operation comprising:

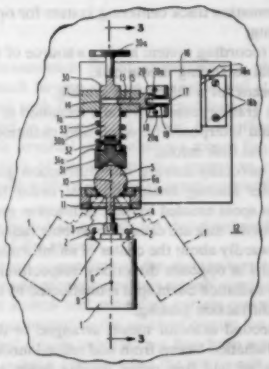
a support and heat conducting bar connected to and between the cover flanges and passing through a nodal point of the stack of driving elements whereby the elements support said bar and said bar supports the cover flanges and the boot is not required to support the cover flanges and additionally heat generated by the stack is conducted by said bar to the cover flanges for dissipation in the surrounding medium while the vibrational characteristics of the transducer are substantially unaffected.

4,462,094

METHOD AND APPARATUS FOR DETERMINING ANGLE OF INCLINATION OF SEISMOMETER AND LEVELING SEISMIC MOTION DETECTORS

Edgar A. Bowden, Arlington, and Maurice J. Prior, Duncanville, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 19, 1980, Ser. No. 161,465
Int. Cl.³ G01V 1/38
U.S. Cl. 367—188 **6 Claims**



1. In an ocean-bottom seismometer unit which includes a frame and a seismic motion detector for detecting seismic waves when said unit is deployed on the ocean bottom and which unit is subsequently recovered at the water's surface for retrieval of recorded seismic wave data, a device for leveling said seismic motion detector comprising:

a ball having a protruding shaft;

means for attaching said seismic motion detector to said shaft;

support means for said ball so that said seismic motion detector hangs from said ball and shaft in a pendular fashion; and

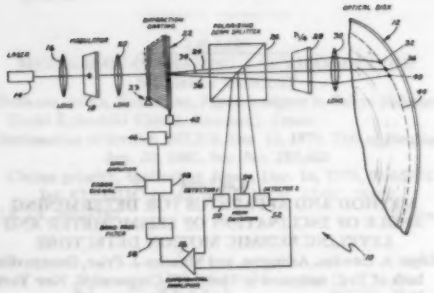
means for locking said ball in its assumed position so that seismic waves are conducted through the frame of said ocean-bottom seismometer, said means, said ball, and said shaft to said seismic motion detector to provide improved coupling of seismic waves to said seismic motion detector.

4,462,095

MOVING DIFFRACTION GRATING FOR AN INFORMATION TRACK CENTERING SYSTEM FOR OPTICAL RECORDING

Di Chen, Colorado Springs, Colo., assignor to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Mar. 19, 1982, Ser. No. 359,641
Int. Cl.³ H04N 5/76; G11B 21/10
U.S. Cl. 369—44 3 Claims



1. An information track centering system for optical recording comprising,

an optical recording system having a source of radiation and an optical recording media disk,

support means for a diffraction grating,

diffraction grating means pivotally mounted to said support means and interposed between said radiation source and said optical disk media,

means for pivotally driving said diffraction grating so that first order leading beam and first order trailing beam radiation spots created by said diffraction grating on said optical media disk are caused to wobble radially, inwardly and outwardly about the center of an information track on said media in opposite directions, respectively, while said primary radiation beam spot is unaffected by the wobbling of said diffraction grating,

first and second detector means arranged to detect the reflected radiation beams from said record media disk representative of said first order leading beam and said first order trailing beam, respectively,

means for forming a time averaged difference signal with respect to the output of said first and second detectors to produce an error signal representative of the difference in amplitude in information bits as detected by said first and second detectors,

band pass filter means for removing from said error signal any unwanted signal outside the frequency spectrum for error detection and correction, and

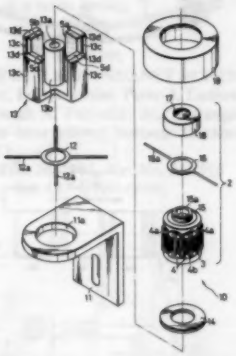
synchronous amplifier-detector means connected to the output of said band pass filter means for producing the system output error signal having an amplitude representative of the distance with which said system is off the center of an information track and switched in synchronization with the wobbling frequency of said diffraction grating so that the output error signal has information representative of the direction in which said system is moved from the center of an information track.

4,462,096

PICKUP ASSEMBLY FOR DISC PLAYER

Satoshi Kusaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 23, 1981, Ser. No. 314,738
Claims priority, application Japan, Oct. 24, 1980, 55-149530; Oct. 31, 1980, 55-153984
Int. Cl.³ G11B 7/12
U.S. Cl. 369—45 11 Claims



1. A pickup assembly for a disc player comprising:

(A) a tube-like movable member having an optical system;

(B) a first coil group wound on said movable member in the direction parallel to the axis of said movable member;

(C) second and third coil groups arranged on said movable member, perpendicular to said first coil group in the space relationship of angle 90° to each other, said second and third coil groups each including a pair of adjoining coils, respectively; and

(D) a magnetic circuit for supplying magnetic fluxes to said first, second and third coil groups, said magnetic circuit including magnetic poles being arranged in the space relationship of angle 90° to each other so as to face to said second and third coil groups respectively, and said movable member being axially and radially supported by spring means to align and bias the adjoining side portions of said paired coils of the second and third coil groups substantially with and toward the center of said magnetic poles respectively.

4,462,097

DYNAMIC VIBRATION ABSORBER FOR A PHONOGRAPH TONE ARM

Jiri Janda; Jiri Burdych; Miroslav Lab, and Pavel Dlabal, all of Prague, Czechoslovakia, assignors to TESLA, koncernovy podnik, Prague, Czechoslovakia

Filed Oct. 29, 1982, Ser. No. 437,630
Claims priority, application Czechoslovakia, Apr. 21, 1982, 2835-82
Int. Cl.³ G11B 3/10, 3/16, 3/18
U.S. Cl. 369—248 7 Claims

1. An arrangement for the adjustment of the vertical tracking force on a stylus mounted in a phonograph stylus holder

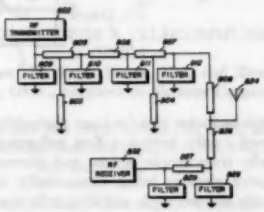
disposed on the outer end of a forward, longer end of the phonograph tone arm and for the absorbtion of vibration imposed thereon, said tone arm being mounted upon and supported by a bearing, the tone arm having a shorter part thereof extending rearwardly from the bearing, said shorter rear part of the tone arm being provided with a rotatable adjustment element, a counterweight system disposed below the tone arm and connected to said rotatable adjustment element so as to be moved selectively in opposite directions lengthwise of the rear portion of the tone arm, means for the longitudinal guiding of the counterweight system on the rear part of the tone arm, the counterweight system comprising a support for the counterweight with substantially vertical and horizontal parts, a bearing supporting a first end of a vertically pivotable oscillating arm provided on the vertical part of the support for the counterweight, a coil compression spring disposed with its lower end on the horizontal part of said support and with its upper end on the other, second end of the vertically pivotably oscillating arm, the counterweight being affixed to and supported by said oscillating arm.

4,462,098

RADIO FREQUENCY SIGNAL COMBINING/SORTING APPARATUS

Robert F. D'Avello, Schaumburg, and Raymond L. Sokola, Lake Zurich, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 16, 1982, Ser. No. 349,348
Int. Cl.³ H04J *1/02*; H04B *1/50*
U.S. Cl. 370—30 **40 Claims**



1. Apparatus for coupling a first signal from a signal source to output means and coupling a second signal from the output means to a signal sink, said apparatus comprising:

(a) first filtering means for coupling the first signal from the signal source to the output means, said first filtering means including at least one bandstop filtering means intercoupled by transmission line means for attentuating signals having frequencies in a stopband of frequencies including the frequency of the second signal, said bandstop filtering means comprised of:

(i) means comprised of a dielectric material and having top and bottom surfaces, said dielectric means further including a hole extending from the top surface to the bottom surface thereof, said dielectric means further being covered entirely with conductive material with the exception of the top surface, and said conductive material being coupled to signal ground; and

(ii) capacitive means including input electrode means comprised of a conductive material disposed on the top surface of the dielectric means at a predetermined distance from the hole in the dielectric means; and

(b) second filtering means for coupling the second signal from the output means to the signal sink, said second filtering means including at least one bandstop filtering means intercoupled by transmission line means for attenuating signals having frequencies in a stopband of frequencies including the frequency of the first signal, said bandstop filtering means comprised of:

(i) means comprised of a dielectric material and having top and bottom surfaces, said dielectric means further including a hole extending from the top surface to the bottom surface thereof, said dielectric means further being covered entirely with a conductive material with the exception of the top surface, and said conductive material being coupled to signal ground; and

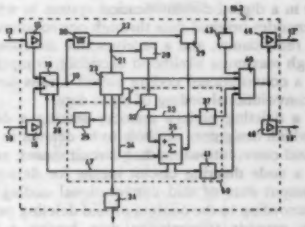
(ii) capacitive means including input electrode means comprised of a conductive material disposed on the top surface of the dielectric means at a predetermined distance from the hole in the ceramic means.

4,462,099

ERROR SOURCE EXCLUDING DATA TRANSMISSION SYSTEM

Fritz Braun, Bolligen, Switzerland, assignor to Hasler AG Bern, Bern, Switzerland

Filed Nov. 9, 1981, Ser. No. 319,426
Claims priority, application Switzerland, Nov. 13, 1980, 8430/80
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—22 **29 Claims**



1. A data transmission system comprising a plurality of terminal units each having at least one input and at least one output connected such that each connected input of a terminal unit is connected to a connected output of another terminal unit, where each terminal unit includes a means for determining the functioning of the transmission operation and where each terminal unit with at least two input connections comprises

a changeover switch to provide for signal induced connecting of one of the inputs;

a receiver circuit connected to the changeover switch for recognizing and receiving certain signals coming from the changeover switch and providing certain test signals;

a test circuit connected to the receiver circuit for determining if the test signals received are free from errors;

an error sum counter connected to the test circuit and to the changeover switch for increasing the error count by an amount corresponding to the error type received at the input;

means for providing an error signal connected to the error sum counter and to the outputs of the terminal unit such that the following terminal units are informed about the error; and

where at least one of the terminal units comprises means for emitting test signals connected to the output of the terminal unit to provide for checking of the functioning of the transmission system.

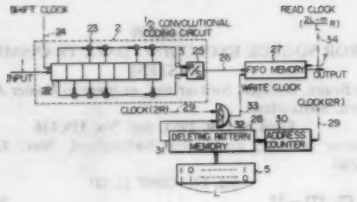
4,462,100

Patent Not Issued For This Number

4,462,101
MAXIMUM LIKELIHOOD ERROR CORRECTING TECHNIQUE

Yutaka Yasuda, Tanashi; Yasuo Hirata, Mitaka, and Akira Ogawa, Machida, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1982, Ser. No. 355,200
Claims priority, application Japan, Mar. 23, 1981, 56-40419
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—43 **4 Claims**



1. A coder for minimum likelihood error correcting technique in a digital communication system in which a transmit side encodes original data through convolutional coding with some redundancy, and a receives side decodes received data through maximum likelihood decoding, comprising:

(a) a convolutional coding circuit means for performing a convolutional coding of input data;

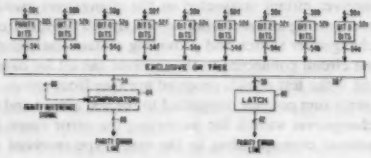
(b) a deleting pattern memory storing a deleting pattern which designates symbols to be deleted in output data of said convolutional coding circuit means; and

(c) a code deleting circuit means for deleting symbols in output data of said convolutional coding circuit means according to the content of said deleting pattern memory, to provide transmission data having a predetermined speed and a coding rate close to 1.

4,462,102
METHOD AND APPARATUS FOR CHECKING THE PARITY OF DISASSOCIATED BIT GROUPS

Timothy R. Povlick, Pittsburgh, Pa., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 1981, Ser. No. 321,035
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—49 **7 Claims**



1. Apparatus for checking the parity of multibyte data that is to be manipulated in a data processing system, the individual bytes of said data each originally having a parity bit normally associated therewith that has been generated in accordance with a predetermined parity scheme, said parity checking apparatus comprising:

(a) a multibyte data bus for conveying a plurality of data bytes;

(b) byte shifting means, coupled to said bus, for receiving the bytes of data conveyed thereto by said data bus and for operating thereon in a manner which causes the parity bits associated with each byte of conveyed data to become disassociated therefrom, thereby making parity-less bytes of data available at its output;

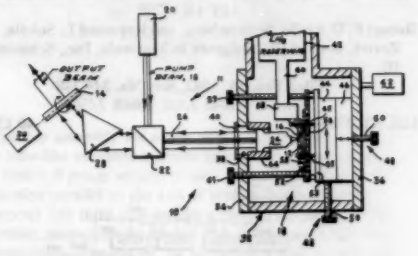
(c) first circuit means, coupled to receive said now disassociated, parity-less data bytes and the original parity bits from said byte shifting means, for generating a new parity bit, in accordance with said predetermined parity scheme, for each byte of data available at the output of said byte shifting means and

(d) second circuit means, coupled to receive said generated parity bit signals of said first circuit means, for comparing said parity bit signals and for generating an output signal, in accordance with, said predetermined parity scheme, indicative of parity for data that has been passed from said multibyte data bus into and through said byte shifting means.

4,462,103
TUNABLE CW SEMICONDUCTOR PLATELET LASER

Michael M. Salour, Cambridge, Mass.; Charles B. Roxlo, Fanwood, N.J., and Dick Bebelaar, Amsterdam, Netherlands, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 23, 1982, Ser. No. 361,021
Int. Cl.³ H01S *3/04*
U.S. Cl. 372—35 **14 Claims**



1. A semiconductor platelet laser comprising:

a resonant cavity having a first reflective element being partially transmissive at one end thereof and a second reflective element being substantially totally reflective optically aligned with said first reflective element at the other end thereof;

a semiconductor lasing medium mounted adjacent said second reflective element within said resonant cavity;

means for providing a beam of electromagnetic radiation for pumping said laser;

means optically interposed within said resonant cavity for directing said pump beam into said resonant cavity and for passing an output laser beam therethrough;

means for providing a vacuum and temperature controlled environment surrounding said semiconductor lasing medium and said second reflective element; and

means optically interposed within said resonant cavity for focusing said pump beams onto said semiconductor lasing medium;

whereby said pump beam initiates lasing action within said resonant cavity and said laser beam outputs from said resonant cavity through said first reflective element.

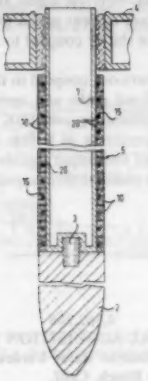
4,462,104
ELECTRODE HOLDER FOR ELECTRIC ARC FURNACES

Dieter Zöllner, Schwaig; Inge Lauterbach-Dammler, Nuremberg; Friedrich Rittman, Rückersdorf, and Franz Schieber, Röthenbach, all of Fed. Rep. of Germany, assignors to Arc Technologies Systems, Ltd., Cayman Islands

Filed Nov. 2, 1982, Ser. No. 438,582
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1981, 3144437; Nov. 9, 1981, 3144520
Int. Cl.³ H05B *7/08*
U.S. Cl. 373—93 **30 Claims**

1. In an electric arc furnace electrode holder having a water-

cooled metal shaft and a working part of a consumable material, the metal shaft being at least partly surrounded by moldings of high-temperature resistant material, the improvement comprising the moldings being removably retained surround-



ing the metal shaft by at least one of form locking and resilient fastening means; said moldings forming a protective jacket, surrounding at least one of portions of the electrode holder located within the arc furnace and a region provided for the clamping of the electrode holder.

4,462,105

TRANSCEIVER UNIT FOR A TELECOMMUNICATION SYSTEM

Theodore Wagner, W. Palm Beach, Fla., and Donald Gray, Midwest City, Okla., assignors to Siemens Corporation, Iselin, N.J.

Continuation of Ser. No. 249,377, Mar. 31, 1981, abandoned. This application Jan. 26, 1982, Ser. No. 342,784

Int. Cl.³ H04L *7/02*

U.S. Cl. 375—8 **11 Claims**

1. A transceiver for use with a digital telephone apparatus suitable for subscriber stations and attendant consoles and adapted to be connected for duplex communication to a telephone speech transmission line by means of transmitter and receiver coils of a transformer, said transceiver being controlled by an internally recovered clock pulse train and comprising, in combination:

(a) a receiving unit connected to the receiving coil of said transformer for receiving a serial ternary level signal stream composed of alternate mark inverted encoded pulses and including:

(a1) compensation filter for compensating distortions of transmitted signals and for filtering out-of-band interferences;

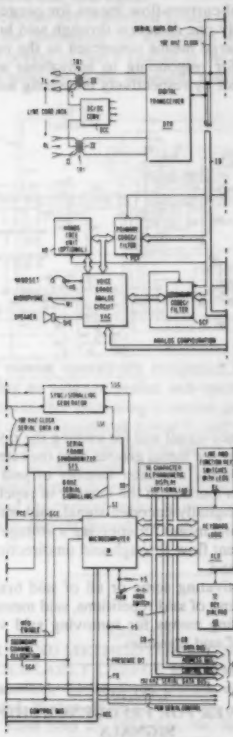
(a2) a full wave rectifier circuit connected to said compensation filter for generating unipolar output signals representing binary values "1" by positive high level pulses;

(a3) a pulse detection circuit connected to said rectifier circuit for deriving rectangular pulses from said unipolar output signals, said rectangular pulses being in phase with said unipolar output signals and having a pulse width of substantially one half the pulse width of said unipolar output signals;

(a4) a phase-locked loop circuit coupled to said pulse detection circuit for reconstructing a clock pulse train from said rectangular pulses generated by said pulse detection circuit, said phase-locked loop circuit having an output supplying said reconstructed clock pulses;

(a5) a D flip-flop having a data input connected to a pulse shaping circuit, a clock input connected to said output of said phase-locked loop circuit and having an output for a data output for a synchronized data stream composed of pulses representing a high level signal for binary values "1" and a low level signal for binary values "0"; and

(b) a transmitting unit having a data input for receiving from said telephone apparatus an outgoing serial/digital data stream identically encoded as an incoming data stream, having a clock pulse input connected to said output of said



phase-locked loop circuit for receiving internal clock pulses and a data output coupled to said transmission line by said transmitter coil of said transformer, said transmitting unit including means for converting the pulses of said outgoing data stream into an output data stream wherein the signals are encoded according to alternate mark inverted encoding.

4,462,106

DIGITAL ENCODING CIRCUITRY

Richard E. De Freitas, Westford, and John J. Blake, Pepperell, both of Mass., assignors to Deltalab Research, Inc., Chelmsford, Mass.

Filed Jan. 13, 1982, Ser. No. 339,185

Int. Cl.³ H04B *12/04*

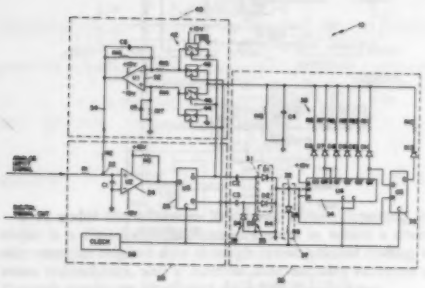
U.S. Cl. 375—30 **15 Claims**

1. An electrical system of the type in which a digitally-encoded signal with high and low states is determined at least in part by the difference between a present value of an input signal and a reconstructed signal representative of a past value of said input signal, and in which the occurrence of a high or a low state in said digitally-encoded signal corresponds to an incremental change in said input signal of an amount dependent upon a reference signal determined from said digitally-encoded signal, said reconstructed signal being generated by a reconstructed signal generating means, said electrical system being characterized by a reference signal generating circuit comprising

ladder network means having a plurality of branches, each of which when activated increase the magnitude of said reference signal and thereby the magnitude of said incremental change in said input signal, and each of which when deactivated decrease the magnitude of said reference signal and thereby the magnitude of said incremental change, said ladder network means comprising

unidirectional-current-flow means for permitting current flow in only one direction through said branches, and

charge-discharge means connected to the output of said branches for responding to activations and deactivations thereof by respectively increasing and decreasing



said reference signal and for making the rate of increase of said reference signal greater than the rate of decrease,

means for activating a greater number of said branches in response to an increase in the number of repetitions of one state in said digitally-encoded signal, said means for activating including means for applying a voltage of a polarity to cause current flow through said unidirectional-current-flow means, and

means for deactivating some or all of said branches in response to an end of said repetitions, said means for deactivating including means for removing said voltage from some or all of said branches.

4,462,107

RADIO RECEIVER FOR FREQUENCY SHIFT KEYED SIGNALS

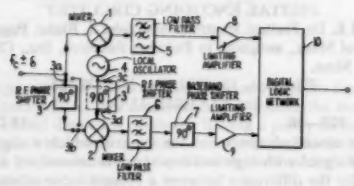
Ian A. W. Vance, Newport, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jul. 1, 1982, Ser. No. 394,059

Claims priority, application United Kingdom, Jul. 16, 1981, 8121877

Int. Cl.³ H04L 27/14

U.S. Cl. 375—88 **15 Claims**



1. A radio receiver for a received signal consisting of frequency shift keyed (FSK) signals carried on a radio frequency (RF) carrier comprising:

at least first and second signal paths to which said received signal is applied, each of said first and second paths including a mixer circuit and a low pass filter connected to the output of said mixer circuit;

a local oscillator operating at a frequency equal to the frequency of said RF carrier coupled to each of said mixer circuits to mix said received signal with an output signal from said oscillator;

a 90° RF phase shifter coupled to a selected one of said oscillator and said received signal such that the output signals of said mixer circuits are in phase quadrature;

a 90° baseband phase shifter coupled to the output of one of said filters; and

a first digital logic network coupled to the output of each of said first and second paths and operative for issuing a digital output representing said FSK signals, said digital output being respectively at a first and a second level when the phases of the output signals of the other of said filters and of said phase shifter respectively coincide and are 180° apart.

4,462,108

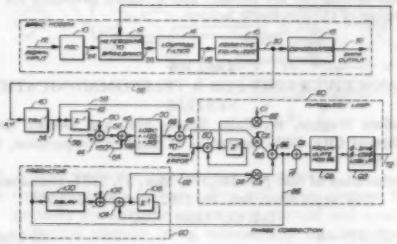
MODEM SIGNAL ACQUISITION TECHNIQUE

Chauncey S. Miller, Rancho Palos Verdes, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Aug. 2, 1982, Ser. No. 404,194

Int. Cl.³ H03D 3/22

U.S. Cl. 375—97 **6 Claims**



1. For use in a receiving-end modem, apparatus for fast carrier acquisition, comprising:

means for determining which of two alternate phasors is currently being received at the modem during a baud synchronization period;

means for computing a phase error signal from the actual angle of the phasor being received and the expected angle of the phasor being received; and

a phase-lock loop for computing, from the phase error signal, sine and cosine values for use in demodulating the carrier;

and wherein said means for determining which of the phasors is being received includes

an arctangent circuit, for providing a signal indicative of the actual angle of the phasor being received;

a delay circuit for providing a signal indicative of the actual angle of the phasor received one baud interval earlier;

means for subtracting the signals indicative of the phase angle and delayed phase angle to obtain a phase angle difference signal;

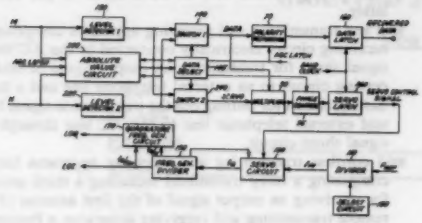
means for subtracting one from the other of the phase angle difference signal and a signal indicative of a fixed angle, to obtain a second difference signal indicative of which of the two alternate phasors is currently being received; and

means for generating from the second difference signal a signal indicative of the phase angle of a corresponding one of the two alternate phasors.

4,462,109
RECEIVER FOR PHASE-SHIFT MODULATED CARRIER SIGNALS

William C. Hughes, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 9, 1982, Ser. No. 406,133
Int. Cl.³ H04L 27/06; H03D 3/22
U.S. Cl. 375—97 15 Claims



1. A receiver for recovering digital data modulated upon a carrier waveform in a digital communication system comprising:

(a) first frequency generating means for producing a first local oscillator signal;

(b) second frequency generating means coupled to said first frequency generating means for producing a second local oscillator signal wherein said first and second local oscillator signals are in quadrature phase relationship with respect to each other;

(c) mixing means coupled to said first and second frequency generating means, respectively, for mixing the modulated carrier with each of said first and second local oscillator signals to form first and second recovered modulation signals, respectively;

(d) amplitude detecting means coupled to said mixing means for selecting the larger and smaller of said first and second recovered modulation signals to form a data signal and a servo signal, respectively;

(e) multiplier means coupled to said amplitude detecting means for multiplying said servo signal by said data signal to form a servo control signal;

(f) frequency varying means coupled to said first frequency generating means for varying the frequency of said first local oscillator signal in response to said servo control signal; and

(g) polarity restoration means coupled to said amplitude detecting means for receiving said data signal and for providing a recovered data signal having the same logic sense as the digital data modulated upon the carrier waveform.

4,462,110
DIGITAL PHASE-LOCKED LOOP

David R. Baldwin, and Nicholas S. Lemak, both of Phoenix, Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Apr. 7, 1981, Ser. No. 251,845
Int. Cl.³ H03B 3/04
U.S. Cl. 377—43 22 Claims

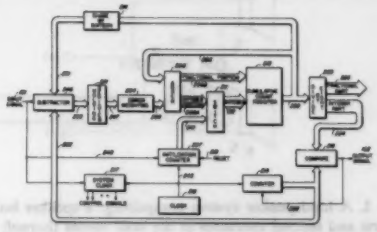
1. Apparatus, responsive to a first signal, having a period which may vary in time, for producing a second signal displaced in phase from the first signal by a constant amount, comprising:

a. means for measuring an average period of a predetermined number of periods of the first signal to determine a measured average period of the predetermined number of periods;

b. means, operatively connected to said means for measuring an average period, for measuring a current period of the first signal to determine a current measured period;

c. first means, operatively connected to said means for measuring an average period and operatively connected to said means for measuring a current period, for comparing a portion of the measured average period with the current measured period to determine a difference, said portion of the measured current period occurring during the phase corresponding to the amount said second signal is displaced from said first signal;

d. means, operatively connected to said first means for comparing, for combining the difference with the measured average period so that a change in the period of the first signal is reflected in the measured average period; and,

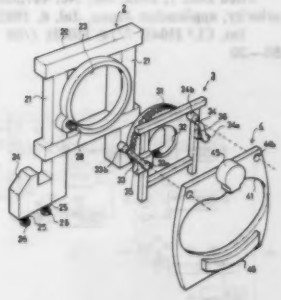


e. second means, operatively connected to said means for measuring an average period and operatively connected to said means for measuring a current period, for comparing said current measured period to said measured average period to produce said second signal when said current measured period equals said measured average period, said second signal operatively coupled to said means for measuring the current period to reset said means for measuring the current period.

4,462,111
APPARATUS AND METHOD FOR EXAMINING A BODY, PARTICULARLY USEFUL IN TOMOGRAPHY

Rafael Blumenthal, Kirist Tivon, Israel, assignor to Elscint Incorporated, Boston, Mass.

Filed May 27, 1982, Ser. No. 382,578
Int. Cl.³ A61B 6/00
U.S. Cl. 378—014 20 Claims

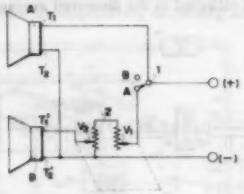


1. A method for scanning a body located in a static frame wherein the scanning regimen involves angular rotation of a scanning head about the body from a first to a second angular position, and curvilinear translation of the scanning head in a plane perpendicular to the axis of rotation of the scanning head about the body while the scanning head is in a fixed angular position.

4,462,112
SPEAKER SYSTEM

Tathuya Watanabe, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1982, Ser. No. 452,236
Claims priority, application Japan, Dec. 25, 1981, 56-193843[U]
Int. Cl.³ H04R 3/12
U.S. Cl. 381—109 3 Claims

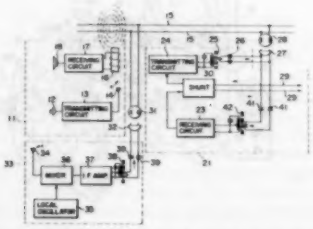


1. A loudspeaker system comprising: a speaker box having first and second apertures in the wall means thereof; first and second loudspeakers mounted in said first and second apertures, respectively, so that the diaphragm of each of said loudspeakers faces outwardly of said speaker box through its associated aperture, said loudspeakers each having first and second voice coil terminals; first and second system input terminals provided on said box and adapted to be connected to an audio signal source; a switch having a switch input terminal connected to said first system input terminal, said switch having a switch output terminal and means for selectively connecting said switch input terminal to said switch output terminal and disconnecting it therefrom; a volume controller connected to said switch output terminal and said first and second voice coil terminal of said second loudspeaker; said first voice coil terminal of said first loudspeaker being directly connected to said first system input terminal, said second voice coil terminals of said first and second loudspeakers being connected together and to said second system input terminal.

4,462,113
CORDLESS TRANSMITTING AND RECEIVING APPARATUS

Keisuke Iwata, Tokyo, Japan, assignor to Iwata Electric Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1982, Ser. No. 447,529
Claims priority, application Japan, Jul. 6, 1982, 57-117557
Int. Cl.³ H04B 7/14; H04H 1/08
U.S. Cl. 455—20 5 Claims



1. A cordless transmitting and receiving apparatus which is capable of providing transmitting and receiving between a key transmitting and receiving apparatus as a fixed station and a portable remote transmitting and receiving apparatus and in which a transmission signal from the key transmitting and receiving apparatus is received in the remote transmitting and receiving apparatus by electromagnetic induction through a commercial AC power line,

said remote transmitting and receiving apparatus comprising a transmitting station including an aural signal transmitting circuit and a first antenna for transmitting an output signal of said circuit and a receiving station including a second antenna electromagnetically coupled to an AC line and a receiving circuit for converting the output signal of said second antenna into an aural signal to put out the latter,

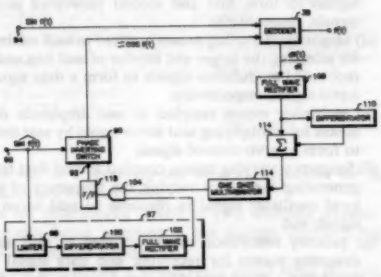
said key transmitting and receiving apparatus comprising a receiving circuit electrically connected to the AC line, a signal shunt for transmitting an output signal of said receiving circuit to an external telephone line and a transmitting circuit for putting out the transmission signal from said external telephone line to the AC line through the signal shunt circuit,

said cordless transmitting and receiving apparatus further comprising a relay transmitter including a third antenna for receiving an output signal of the first antenna of the remote transmitting and receiving apparatus, a frequency converter for frequency-converting the output signal of said third antenna and connection means for applying the output signal of said frequency converter to the AC line.

4,462,114
SIGNUM SIGNAL GENERATOR

Norman W. Parker, Wheaton, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 165,474, Jul. 2, 1980. This application Sep. 30, 1982, Ser. No. 431,425
Int. Cl.³ H03B 25/00; H04B 1/62
U.S. Cl. 455—203 6 Claims



1. A signum circuit for deriving a signal sgn (df(t)/dt) where f(t) is an information signal and comprising: first input means for receiving a first input signal of the form sin f(t);

second input means for receiving a second input signal which is the Hilbert transform of sin f(t);

decoder means for providing f(t) at a first output and df(t)/dt at a second output and having a first input coupled to the first input means;

zero crossing detector means coupled to the second input means for detecting all zero crossings in the second input signal;

zero crossing predictor means coupled to the decoder means for predicting each zero crossing in the second decoder output signal;

selector means coupled to the detector means and the predictor means for selecting those detected zero crossings which essentially coincide with the predicted zero crossings; and

means coupled to the second input means and to the selector means for reversing the phase to the second input signal in response to the output of the selector means, and wherein the output of the phase reversing means is coupled to a second input of the decoder means.

DESIGN PATENTS

GRANTED JUL. 24, 1984

ERRATA

For CLASS	See PATENT NO.
D14–106	274,798
D15–126	274,803

274,764

LADY'S SHOE OR SIMILAR ARTICLE

Enzo Angiolini, Florence, Italy, assignor to Marx & Newman Company, New York, N.Y.

Filed Jun. 9, 1982, Ser. No. 386,830

Term of patent 14 years

U.S. Cl. D2—294

274,765

UMBRELLA HANDLE

James H. Allen, Covington, Ky., assignor to 'totes', incorporated, Loveland, Ohio

Filed Nov. 18, 1981, Ser. No. 322,450

Term of patent 14 years

U.S. Cl. D3—12

274,766

UMBRELLA HANDLE

James H. Allen, Covington, Ky., assignor to 'totes', incorporated, Loveland, Ohio

Filed Nov. 18, 1981, Ser. No. 322,524

Term of patent 14 years

U.S. Cl. D3—12

274,767

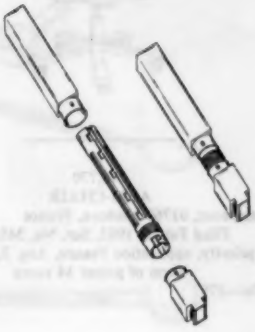
STORAGE AND MAILING FILE FOR ROLLED PRINTS, DOCUMENTS, AND THE LIKE

Dennis E. Fuller, P.O. Box 408, Union, Mich. 49130

Filed Oct. 26, 1981, Ser. No. 314,572

Term of patent 14 years

U.S. Cl. D3—30.1



274,768

TUBULAR NETTING CHAIR

Herbert Ohl, Darmstadt, Fed. Rep. of Germany, assignor to Wilkhahn Wilkening & Hahne GmbH & Co., Fed. Rep. of Germany

Filed Mar. 26, 1982, Ser. No. 362,055

Term of patent 14 years

U.S. Cl. D6—365

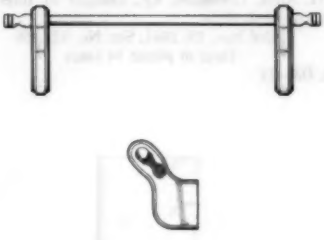
274,769
CHAIR
Hans V. Klier, Milan, Italy, assignor to Olivetti Synthesis, S.p.A., Ivrea, Italy
Filed Mar. 10, 1981, Ser. No. 242,329
Claims priority, application Italy, Sep. 17, 1980, 53513 B/80
Term of patent 14 years
U.S. Cl. D6—366

274,770
ARM-CHAIR
Henry Massonnet, 01760 Nurieux, France
Filed Feb. 2, 1982, Ser. No. 345,179
Claims priority, application France, Aug. 3, 1981, 812724
Term of patent 14 years
U.S. Cl. D6—375

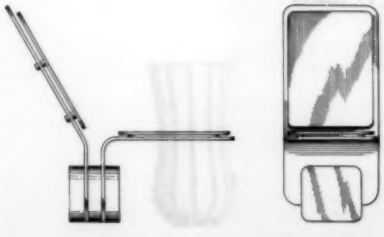
274,771
CHAIR
Emilio Ambasz, New York, N.Y., and Giancarlo Piretti, Bologna, Italy, assignors to Center for Design Research and Development NV, Curacao, Netherlands Antilles
Filed Apr. 3, 1981, Ser. No. 250,606
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1980, 1037/80
Term of patent 14 years
U.S. Cl. D6—375

274,772
COLLAPSIBLE TUBE WINDER
Donald R. Obland, 6750 S. Clermont, Littleton, Colo. 80122
Filed Jun. 15, 1981, Ser. No. 273,987
Term of patent 14 years
U.S. Cl. D6—541

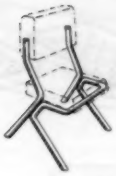
274,773
RACK FOR QUILTS, BLANKETS AND SPREADS
Gerald A. Coleman, 1518 E. Sycamore St., Vincennes, Ind. 47591
Filed Sep. 28, 1982, Ser. No. 426,174
Term of patent 14 years
U.S. Cl. D6—553



274,774
DISPLAY UNIT
Attilio Brentini, Le Chateau, Crissier, Vaud, Switzerland (CH-1023)
Continuation-in-part of Ser. No. 20,245, Mar. 13, 1979, abandoned. This application Jul. 21, 1981, Ser. No. 285,460
Term of patent 14 years
U.S. Cl. D6—483



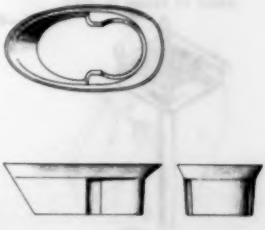
274,775
CHAIR FRAME
Ed Meyer, Glen Ellyn, Ill., assignor to Imperial Mfg. Co., Memphis, Tenn.
Filed Feb. 20, 1981, Ser. No. 236,230
Claims priority, application Canada, Oct. 27, 1980, 27-10-80-1
Term of patent 14 years
U.S. Cl. D6—380



274,776
SCOOP
Patrick J. Molloy, and Reuben S. Lambert, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Feb. 25, 1982, Ser. No. 352,294
Term of patent 14 years
U.S. Cl. D7—104

274,777
SCOOP OR THE LIKE
Martin J. Wolff, North Providence, R.I., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Mar. 22, 1982, Ser. No. 360,266
Term of patent 14 years
U.S. Cl. D7—104

274,778
SCOOP
John S. Reece, Cincinnati; Timothy J. Beechuk, Batavia, and William J. O'Neil, Jr., Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jul. 6, 1982, Ser. No. 395,363
Term of patent 14 years
U.S. Cl. D7—104



274,779

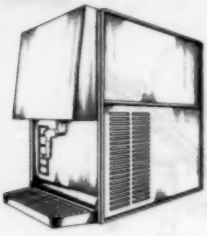
REFRIGERATED COFFEE DISPENSER

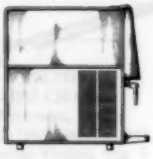
Edward J. LaLumiere, Woburn, Mass., assignor to Jet Spray Corp., Norwood, Mass.

Filed May 17, 1982, Ser. No. 379,275

Term of patent 14 years

U.S. Cl. D7—311





274,780

COOKING GRILL OR SIMILAR ARTICLE

Craig R. Thomas, and Robert J. Thomas, both of Cherokee, Iowa, assignors to R. J. Thomas Manufacturing Co., Cherokee, Iowa

Filed Feb. 22, 1982, Ser. No. 350,986

Term of patent 14 years

U.S. Cl. D7—335

274,781

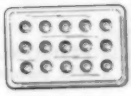
CAKE PAN

Dennis K. Baker, 7441 Claire St., Los Angeles, Calif. 91335, and Harold W. Schwochert, 23634 Califa St., Los Angeles, Calif. 91367

Filed Dec. 24, 1981, Ser. No. 334,318

Term of patent 14 years

U.S. Cl. D7—359



274,782

STAND FOR A BEVERAGE DISPENSING CONTAINER

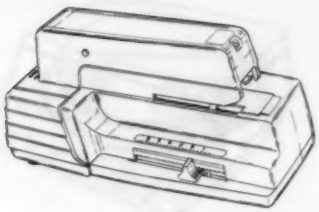
Thomas E. Little, 2610 Nicholson St., Houston, Tex. 77008

Filed May 28, 1982, Ser. No. 383,146

Term of patent 14 years

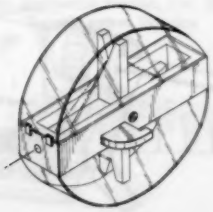
U.S. Cl. D7—397

274,783
STAPLING MACHINE
Lars-Göran Rosenblad, Grönna, Sweden, assignor to Isabergs Verkastads AB, Hestra, Sweden
Filed Aug. 3, 1981, Ser. No. 289,228
Claims priority, application Sweden, Mar. 23, 1981, 81-0709
Term of patent 14 years
U.S. Cl. D8—58



274,784
HANDLE FOR LUGGAGE OR THE LIKE
Joseph Y. Pelavin, North Bergen, N.J., and Edward M. Stolarz, Yorktown Heights, N.Y., assignors to CPG Products Corp., Minneapolis, Minn.
Filed Mar. 3, 1982, Ser. No. 354,278
Term of patent 14 years
U.S. Cl. D8—306

274,785
KITE REEL SPOOL
Maria da Gloria Germano, 42-30 Hampton St., Elmhurst, N.Y. 11373
Filed Jul. 9, 1982, Ser. No. 396,746
Term of patent 14 years
U.S. Cl. D8—359

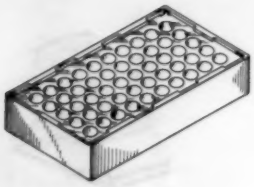


274,786
FIXTURE HANGER MEMBER
Hendrik A. J. de Vos, Swansea, Mass., assignor to GTE Products Corporation, Stamford, Conn.
Filed Feb. 22, 1982, Ser. No. 350,848
Term of patent 14 years
U.S. Cl. D8—373

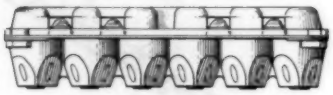
274,787
BRACKET FOR A VENTILATION FAN
Richard W. Cronce, 1119 S. Lemon, Anaheim, Calif. 92805
Filed Nov. 29, 1982, Ser. No. 445,102
Term of patent 14 years
U.S. Cl. D8—373

274,788
SNAP-ON SHROUD FOR CASTER
Robert J. Simonsen, Posey County, Ind., assignor to Axia Incorporated, Oakbrook, Ill.
Filed Aug. 16, 1982, Ser. No. 408,239
Term of patent 14 years
U.S. Cl. D8—375

274,789
PACKAGING CONTAINER FOR AMMUNITION
Robert G. Brown, Wood River, Ill.; Joe Joice, St. Peters, Mo., and John Pardo, Yonkers, N.Y., assignors to Olin Corporation, Stamford, Conn.
Filed Jun. 29, 1981, Ser. No. 278,806
Term of patent 14 years
U.S. Cl. D9—341



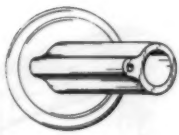
274,790
EGG CARTON
Kenneth D. Bixler, Huntington, N.Y.; Henry A. Lord, Cape Elizabeth, Me., and Richard F. Reifers, New Canaan, Conn., assignors to Diamond International Corporation, New York, N.Y.
Filed Sep. 29, 1981, Ser. No. 306,977
Term of patent 14 years
U.S. Cl. D9—345



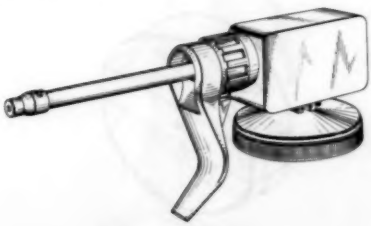
274,791
DISPENSING CONTAINER
Bruce A. Freeman, Oklahoma City, Okla., assignor to Continental Plastics Company, Oklahoma City, Okla.
Filed Mar. 29, 1982, Ser. No. 363,066
Term of patent 14 years
U.S. Cl. D9—352

274,792
SEALING CAP FOR SODA CANS OR THE LIKE
Floyd J. Price, 951 Linden Ave., Rialto, Calif. 92376
Filed Jan. 22, 1982, Ser. No. 341,870
Term of patent 14 years
U.S. Cl. D9—438

274,793
DISPENSING NOZZLE FOR A CONTAINER
Bruce A. Freeman, Oklahoma City, Okla., assignor to Continental Plastics Company, Oklahoma City, Okla.
Filed Mar. 29, 1982, Ser. No. 362,984
Term of patent 14 years
U.S. Cl. D9—447

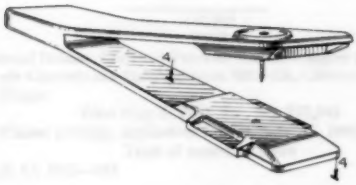


274,794
COMBINED VALVE ACTUATOR AND DISPENSING CAP FOR A PRESSURIZED CONTAINER
Paul A. Witte, New Hope, Pa., assignor to Falcon Safety Products, Inc., Mountainside, N.J.
Filed Nov. 12, 1981, Ser. No. 320,749
Term of patent 14 years
U.S. Cl. D9—448

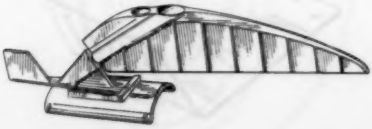


274,795
COMPUTING AND PRINTING SCALE
Johannes Wirth, Zurich, Switzerland, assignor to Wirth, Gallo & Co., Zurich, Switzerland
Filed Mar. 12, 1982, Ser. No. 357,750
Term of patent 14 years
U.S. Cl. D10—91

274,796
REUSABLE THEFT DETERRENT TAG HOUSING
David R. Humble, Coral Springs, Fla., assignor to Sensormatic Electronics Corporation, Deerfield Beach, Fla.
Filed May 27, 1980, Ser. No. 153,822
The portion of the term of this patent subsequent to Jan. 24, 1996, has been disclaimed.
Term of patent 14 years
U.S. Cl. D10—104



274,797
WIND DIRECTION INDICATOR
Nils H. Unden, Box 213, S-121 02 Johanneshov, Sweden
Filed Jun. 17, 1981, Ser. No. 275,946
Claims priority, application Sweden, Jun. 20, 1980, 80-2539
Term of patent 14 years
U.S. Cl. D10—109

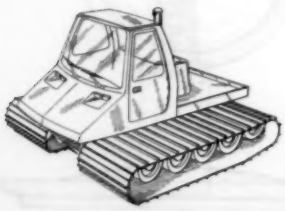


274,798
PORTABLE PERSONAL INFORMATION DEVICE WITH CALENDAR-CLOCK
Gary J. O'Hara, San Diego, and Evelyn S. Madlener, Berkeley, both of Calif., assignors to Design Dimensions, Ltd., Berkeley, Calif.
Filed Feb. 1, 1982, Ser. No. 344,314
Term of patent 14 years
U.S. Cl. D14—106

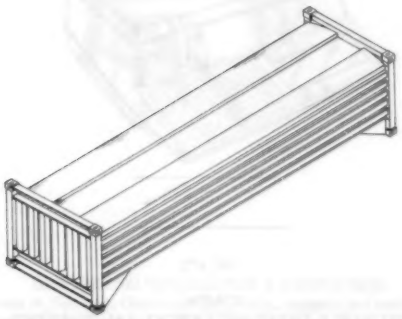
274,799
WALL PLAQUE
Philip J. Guest, and Barry Glover, both of Stoke-on-Trent, England, assignors to Royal Doulton Tableware Ltd., Stoke-on-Trent, England
Filed Feb. 22, 1982, Ser. No. 351,060
Claims priority, application United Kingdom, Aug. 22, 1981, 1002623
Term of patent 14 years
U.S. Cl. D11—132

274,800
TROPHY BASE
Emil Gilliotti, Rye Town, N.Y., assignor to Coats & Clark, Inc.
Filed Jun. 14, 1982, Ser. No. 388,443
Term of patent 14 years
U.S. Cl. D11—164

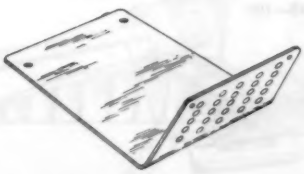
274,801
TRACKED VEHICLE FOR OFF ROAD USE
John Griffin, Salt Lake City; James A. Thompson, and Michael G. Beeley, both of Logan, all of Utah, assignors to Logan Manufacturing Co., Logan, Utah
Filed Dec. 4, 1981, Ser. No. 327,483
Term of patent 14 years
U.S. Cl. D12—7



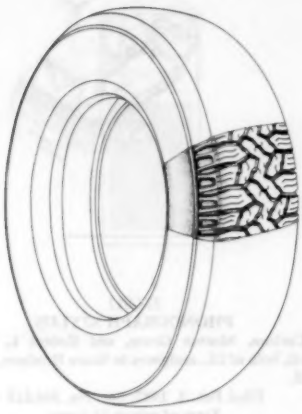
274,802
DEMOUNTABLE CONTAINER
Robin E. Fossey, Redhills, and Ian P. J. McKenna, Dundalk, both of Ireland, assignors to Container Engineering (Ireland) Limited, Ireland
Filed Sep. 22, 1981, Ser. No. 304,598
Claims priority, application Ireland, Apr. 7, 1981, 60/81
Term of patent 14 years
U.S. Cl. D12—97



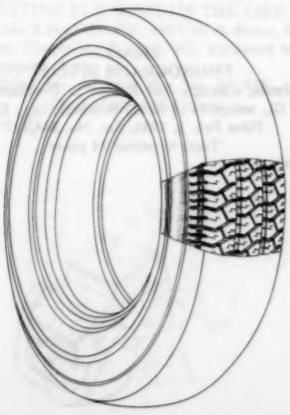
274,803
MOTORCYCLE ENGINE PROTECTOR PLATE
Edgar O. Hughes, 3993 Radtka Dr., Warren, Ohio 44481
Filed Aug. 17, 1981, Ser. No. 293,164
Term of patent 14 years
U.S. Cl. D12—126



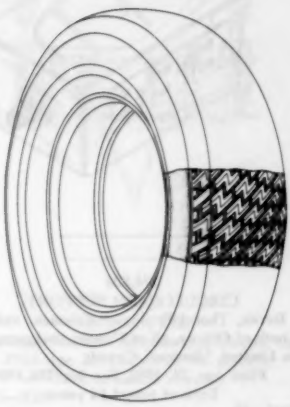
274,804
TIRE
Claude Bard, Chamalieres; Joel Ricquet, Clermont-Ferrand, and Etienne Roliand, Pont-du-Chateau, all of France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France
Filed May 5, 1982, Ser. No. 374,961
Claims priority, application France, Nov. 27, 1981, 65
Term of patent 14 years
U.S. Cl. D12—146



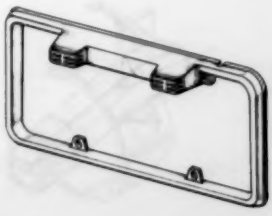
274,805
TIRE
Marcel Dalmas, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France
Filed May 5, 1982, Ser. No. 375,340
Claims priority, application France, Nov. 27, 1981, 64
Term of patent 14 years
U.S. Cl. D12—146



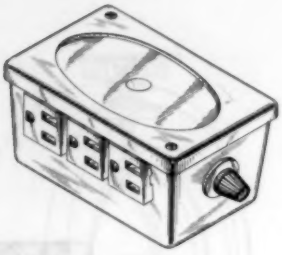
274,806
TIRE
Michel Epinat, Greenville, S.C., assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France
Filed Sep. 24, 1982, Ser. No. 423,548
Term of patent 14 years
U.S. Cl. D12—151



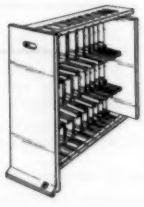
274,807
COMBINED VEHICLE LICENSE PLATE FRAME AND REVERSE WARNING ALARM
Benjamin H. Stansbury, Jr., Beverly Hills, and Thomas W. Fleming, Van Nuys, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 2, 1982, Ser. No. 345,188
Term of patent 14 years
U.S. Cl. D12—193



274,808
MULTIPLE OUTLET
Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.
Filed Apr. 19, 1982, Ser. No. 369,727
Term of patent 14 years
U.S. Cl. D13—30

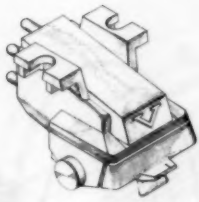


274,809
CIRCUIT CARD SUPPORT
Isaac R. Revah, Thornhill; Jozsef Kelemen, and Earnest C. Leung, both of Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Apr. 21, 1981, Ser. No. 256,150
Term of patent 14 years
U.S. Cl. D13—40

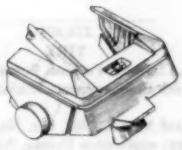


274,810
PHONOGRAPHIC CARTRIDGE
John C. Jones, Chicago, and Robert L. Deschamps, Bartlett, both of Ill., assignors to Shure Brothers, Inc., Evanston, Ill.
Filed Jul. 24, 1984, Ser. No. 344,814
Term of patent 14 years
U.S. Cl. D14—28

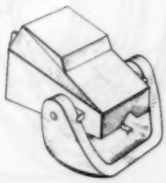
274,811
PHONOGRAPH CARTRIDGE
Julius Carlson, Morton Grove, and Robert L. Deschamps, Bartlett, both of Ill., assignors to Shure Brothers, Inc., Evanston, Ill.
Filed Feb. 1, 1982, Ser. No. 344,816
Term of patent 14 years
U.S. Cl. D14—28



274,812
PHONOGRAPH STYLUS
Julius Carlson, Morton Grove, and Robert L. Deschamps, Bartlett, both of Ill., assignors to Shure Brothers, Inc., Evanston, Ill.
Filed Feb. 1, 1982, Ser. No. 344,815
Term of patent 14 years
U.S. Cl. D14—29



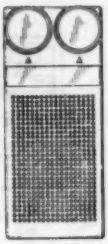
274,813
PHONOGRAPH STYLUS
John C. Jones, Chicago, and Robert L. Deschamps, Bartlett, both of Ill., assignors to Shure Brothers, Inc., Evanston, Ill.
Filed Feb. 1, 1982, Ser. No. 344,817
Term of patent 14 years
U.S. Cl. D14—29



274,814
PORTABLE RADIO

Thomas K. Tang, 4th Floor, Hip Shing Factory Bldg., 11 San Wan Ho St., Shaukiwan, Hong Kong, Hong Kong

Filed Jan. 25, 1982, Ser. No. 342,496
Claims priority, application United Kingdom, Jul. 31, 1981, 1001764
Term of patent 14 years
U.S. Cl. D14—70



274,815
LAWN MOWER ROTOR SUPPORT HOUSING FOR CUTTING ELEMENTS OR THE LIKE

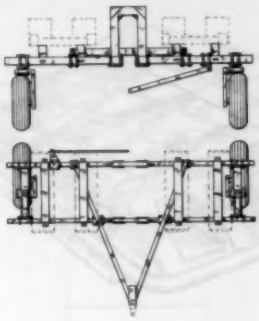
Arthur J. Ehrler, Lake City, Fla., and Carl A. Roser, Rte. 9, 205 Proffitt La., Kingsport, Tenn. 37663, assignors to Carl A. Roser, Kingsport, Tenn.

Filed Jun. 30, 1982, Ser. No. 393,528
Term of patent 14 years
U.S. Cl. D15—17

274,816
AGRICULTURAL CHEMICAL TRANSPORT TRAILER

Andrew C. Yoder, R.R. #1, Amboy, Ind. 46911

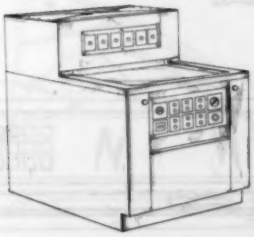
Filed Sep. 16, 1982, Ser. No. 418,700
Term of patent 14 years
U.S. Cl. D15—27



274,817
DIE CUTTER

Henry H. Jenkins, 864 W. Hacienda Dr., Corona, Calif. 91720

Filed Apr. 30, 1981, Ser. No. 259,011
Term of patent 14 years
U.S. Cl. D15—128

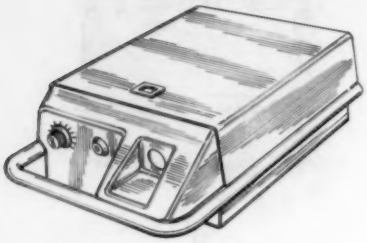


274,818
SAFETY SPLASH GUARD SHIELD FOR METAL WORKING MACHINES

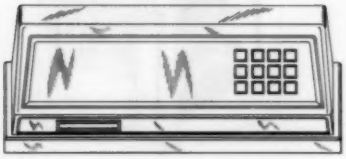
Israel A. Macias, 430 Palo Verde Dr., Sunnyvale, Calif. 94086

Filed Oct. 9, 1981, Ser. No. 309,988
Term of patent 14 years
U.S. Cl. D15—138

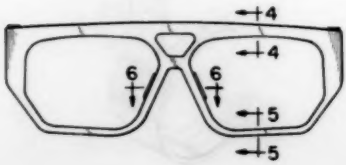
274,819
WELDING MACHINE
Mark H. Bouman, Burnsville, Minn., assignor to Century Mfg. Co., Minneapolis, Minn.
Filed Sep. 16, 1982, Ser. No. 418,795
Term of patent 14 years
U.S. Cl. D15—144



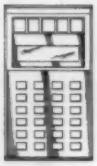
274,820
COPY MACHINE CONTROLLER
Stuart W. Sizer, Harbert, Mich., assignor to Swiss Controls Inc., Michigan City, Ind.
Filed Mar. 25, 1982, Ser. No. 361,830
Term of patent 14 years
U.S. Cl. D16—32



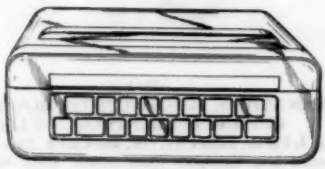
274,821
EYEGLASS FRAME OR THE LIKE
Thomas M. Dair; Davin B. Stowell, and Tucker L. Viemeister, all of New York, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Sep. 29, 1982, Ser. No. 427,751
Term of patent 14 years
U.S. Cl. D16—118

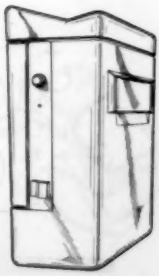


274,822
ELECTRONIC CALCULATOR
Masafumi Yamagami, and Keiji Sakata, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jun. 18, 1984, Ser. No. 389,958
Claims priority, application Japan, Dec. 26, 1981, 56-58613
Term of patent 14 years
U.S. Cl. D18—7

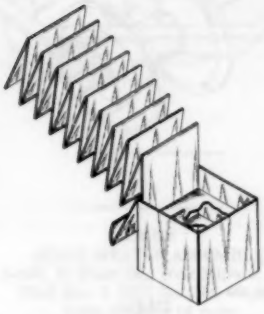


274,823
PORTABLE BILLING MACHINE
Anthony Leach, Northampton, and John F. Wickham, Towcester, both of England, assignors to Immediate Business Systems plc, London, England
Filed Feb. 12, 1984, Ser. No. 348,307
Claims priority, application United Kingdom, Aug. 15, 1981, 1002011
Term of patent 14 years
U.S. Cl. D18—13

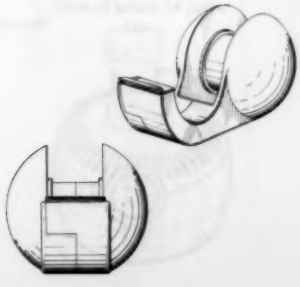




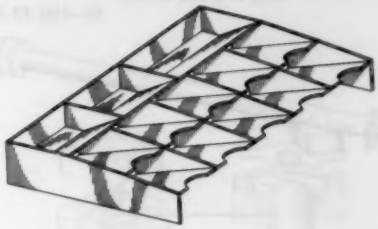
274,824
CUBE BOOK
Waldo H. Hunt, Encino, Calif., assignor to Intervisual Communications Inc., Los Angeles, Calif.
Filed Jan. 18, 1982, Ser. No. 340,070
Term of patent 14 years
U.S. Cl. D19—28



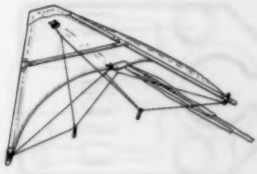
274,825
ADHESIVE TAPE DISPENSER
Adelio Lissoni, Vedano Olona, Italy, assignor to Siat S.p.A. Societa Internazionale Applicazioni Techniche, Turate, Italy
Filed Jul. 22, 1981, Ser. No. 285,743
Claims priority, application Italy, Jan. 23, 1981, 20549/81[U]
Term of patent 14 years
U.S. Cl. D19—69



274,826
GAME BOARD ACCESSORY ORGANIZER
David L. Wood, 734 Rhoda Ave., Youngstown, Ohio 44509
Filed Apr. 29, 1982, Ser. No. 373,253
Term of patent 14 years
U.S. Cl. D21—54



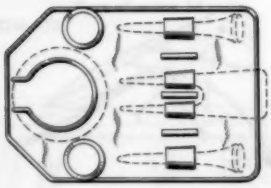
274,827
STUNT KITE
Frederick Belloff, 280 Surf View Ct., Del Mar, Calif. 92014
Filed Aug. 5, 1981, Ser. No. 290,188
Term of patent 14 years
U.S. Cl. D21—88



274,828
FOOT SUPPORT FOR PHYSICAL EXERCISER
Roger C. Evans, 10214 Dogwood Ave., Palm Beach Gardens, Fla. 33410
Filed May 1, 1981, Ser. No. 259,756
Term of patent 14 years
U.S. Cl. D21—191

274,829
EXERCISE BAR OR SIMILAR ARTICLE
Jack O. Bankier, 1724 Longvalley Dr., Northbrook, Ill. 60062
Filed Jan. 11, 1982, Ser. No. 338,604
Term of patent 14 years
U.S. Cl. D21—198

274,830
GOLF ACCESSORY HOLDER
Robert J. Lynch, 2103 11th St., Cuyahoga Falls, Ohio 44221
Filed Dec. 21, 1981, Ser. No. 332,532
Term of patent 14 years
U.S. Cl. D21—234

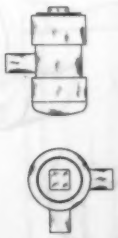


274,831
STILL WATER MINNOW TRAP
Frank E. Morrison, 144 Staats Pl., Bartlesville, Okla. 74003
Filed Apr. 16, 1982, Ser. No. 369,260
Term of patent 14 years
U.S. Cl. D22—18

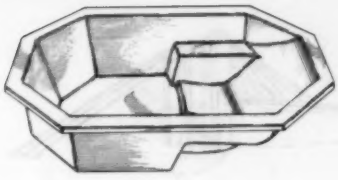
274,832
FISHING REEL SPOOL
Tatsuo Sugimoto, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Filed Jul. 28, 1982, Ser. No. 402,735
Claims priority, application Japan, Feb. 3, 1982, 57-4235
Term of patent 14 years
U.S. Cl. D22—25

274,833
SPRING DEVICE FOR FISHING BAIT
Leif G. Svensson, Postlåda 1130, Gungvala 3, 290 70 Sviingsta, Sweden
Filed Jul. 29, 1982, Ser. No. 403,082
Claims priority, application Sweden, Feb. 2, 1982, 82-0207
Term of patent 14 years
U.S. Cl. D22—27

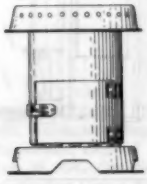
274,834
CHEMICAL DISPENSER FOR TOILETS
Gary A. May, 606 Lembo Cir., #105, Clearwater, Fla. 33515
Filed Apr. 26, 1982, Ser. No. 371,663
Term of patent 14 years
U.S. Cl. D23—3



274,835
BATHTUB
George Gruber, 27563 Oak Springs, Canyon Rd., Canyon Country, Calif. 91351
Filed Jul. 16, 1982, Ser. No. 398,959
Term of patent 14 years
U.S. Cl. D23—55

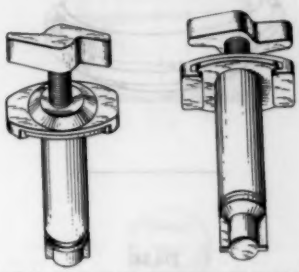


274,836
SPACE HEATER ASSEMBLY
Edward J. Smith, 11 Bisset Dr., West Milford, N.J. 07480
Filed Dec. 2, 1982, Ser. No. 446,480
Term of patent 14 years
U.S. Cl. D23—97

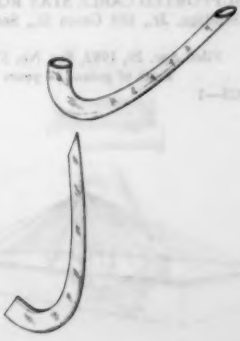


274,837
AIR PURIFIER
Patrick E. Lynch, Thornton, Colo., and James M. Wimsatt, Reno, Nev., assignors to Pyramid Products, Inc., Thornton, Colo.
Continuation-in-part of Ser. No. 171,763, Jul. 24, 1980. This application Nov. 29, 1982, Ser. No. 445,301
Term of patent 14 years
U.S. Cl. D23—149

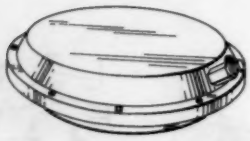
274,838
SYRINGE
David W. Shadwell, Macclesfield, England, assignor to Imperial Chemical Industries PLC, London, England
Filed Dec. 7, 1981, Ser. No. 328,431
Claims priority, application United Kingdom, Jun. 19, 1981, 1001081
Term of patent 14 years
U.S. Cl. D24—24



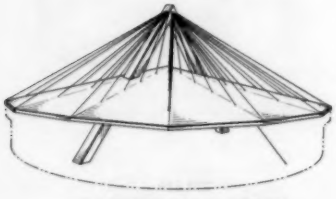
274,839
HEARING AID COUPLER
E. Robert Libby, Bala Cynwyd, Pa., assignor to Associated Auditory Instruments, Inc., Upper Darby, Pa.
Filed Nov. 23, 1981, Ser. No. 323,816
Term of patent 14 years
U.S. Cl. D24—35



274,840
DIATHERMY APPLICATOR HEAD
Fred M. Berry, Johnson County, Kans., and Leonard L. Perlmutter, Jackson County, Mo., assignors to International Medical Electronics, Ltd., Kansas City, Mo.
Filed Mar. 15, 1982, Ser. No. 358,526
Term of patent 14 years
U.S. Cl. D24—68



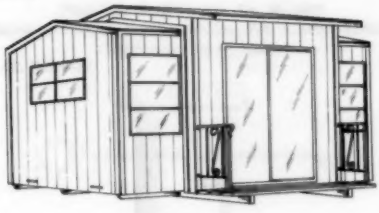
274,841
A-FRAME SUPPORTED CABLE STAY ROOF STRUCTURE
Adam T. Schildge, Jr., 899 Green St., San Francisco, Calif. 94133
Filed Apr. 29, 1982, Ser. No. 372,932
Term of patent 14 years
U.S. Cl. D25—1



274,842
TOWER SUPPORTED CABLE STAY ROOF STRUCTURE
Adam T. Schildge, Jr., 899 Green St., San Francisco, Calif. 94133
Filed Apr. 29, 1982, Ser. No. 372,933
Term of patent 14 years
U.S. Cl. D25—1

274,843
TOWER SUPPORTED ASYMMETRICAL CABLE STAY ROOF STRUCTURE
Adam T. Schildge, Jr., 899 Green St., San Francisco, Calif. 94133
Filed Apr. 29, 1982, Ser. No. 373,041
Term of patent 14 years
U.S. Cl. D25—1

274,844
TRAILER CARRIABLE HOUSE
Edward G. Corey, Elkhart, Ind., assignor to Park Homes, Inc., Elkhart, Ind.
Filed Aug. 9, 1982, Ser. No. 406,385
Term of patent 14 years
U.S. Cl. D25—22



274,845
FLASH LIGHT OR SIMILAR ARTICLE
Benjamin H. Stansbury, Jr., Beverly Hills, and Lanny A. Gorton, Sunland, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 2, 1982, Ser. No. 344,909
Term of patent 14 years
U.S. Cl. D26—46

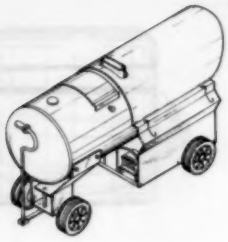
274,846
PHARMACEUTICAL TABLET
Anthony B. J. Eoga, Boonton, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Jul. 20, 1981, Ser. No. 284,898
Term of patent 14 years
U.S. Cl. D28—2

274,847
COMB
Arthur W. D. Allpress, Wokingham, England, assignor to Clinicomb Limited, Chippenham, England
Filed Feb. 18, 1982, Ser. No. 350,064
Claims priority, application United Kingdom, Aug. 21, 1981, 1002097
Term of patent 14 years
U.S. Cl. D28—21

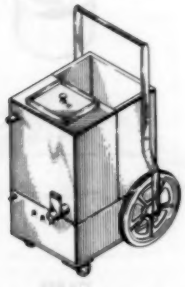
274,848
COSMETIC POT
Alain Chevassus, Sceaux, France, assignor to Lefebure Isolants Reunis, Rungis, France
Filed Apr. 26, 1982, Ser. No. 371,579
Claims priority, application France, Dec. 24, 1981, 814471
Term of patent 14 years
U.S. Cl. D28—76

274,849
GAS FILTER CONTAINER FOR A RESPIRATOR
James D. Cleary, Monrovia, Calif., assignor to Figgie International Inc., Willoughby, Ohio
Filed Aug. 20, 1981, Ser. No. 294,489
Term of patent 14 years
U.S. Cl. D29—7

274,850
HIGH PRESSURE HOT LIQUID CLEANING APPARATUS
Bob R. Smith, Rte. 1, Box 108AB, Siloam Springs, Ark. 72761
Filed Sep. 29, 1982, Ser. No. 428,447
Term of patent 14 years
U.S. Cl. D32—1

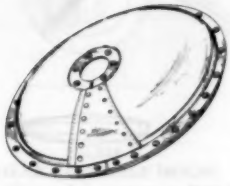


274,851
CARPET CLEANING MACHINE
Mark Schmitz, P.O. Box 20751, Dallas, Tex. 75229
Filed Jun. 1, 1981, Ser. No. 268,881
Term of patent 14 years
U.S. Cl. D32—15



274,852
END PANEL INSULATOR FOR A TEMPERATURE-CONTROLLED ROTARY CYLINDER
Leland A. Withers, Sr., Austell; L. Andrew Withers, Jr., Mableton; Jean D. Withers, Auburn, and Carlo Fineo, Austell, all of Ga., assignors to Scapa Inc., Waycross, Ga.
Filed Aug. 6, 1981, Ser. No. 290,586
Term of patent 14 years
U.S. Cl. D32—25

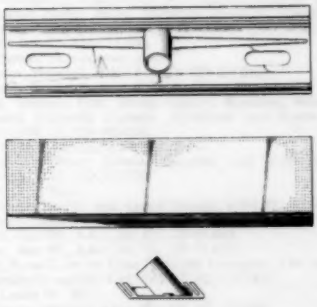
274,853
END PANEL INSULATOR FOR A TEMPERATURE-CONTROLLED ROTARY CYLINDER
Leland A. Withers, Sr., Austell; L. Andrew Withers, Jr., Mableton; Withers, Jean D., Auburn, and Carlo Fineo, Austell, all of Ga., assignors to Scapa Inc., Waycross, Ga.
Filed Oct. 2, 1981, Ser. No. 307,736
Term of patent 14 years
U.S. Cl. D32—25



274,854
MOP CARRIER
Masanobu Nishiyama, Osaka; Fusao Kanazawa, Neyagawa; Hisaji Tanaka, and Tatsuo Nishimura, both of Osaka, all of Japan, assignors to Duskin Franchise Kabushiki Kaisha, Osaka, Japan
Filed Oct. 16, 1981, Ser. No. 312,368
Claims priority, application Japan, May 13, 1981, 56-20383
Term of patent 14 years
U.S. Cl. D32—50

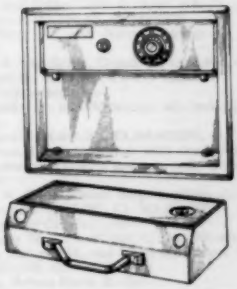
274,855
MOP
Masanobu Nishiyama, Osaka; Fusao Kanazawa, Neyagawa; Hisaji Tanaka, and Tatsuo Nishimura, both of Osaka, all of Japan, assignors to Duskin Franchise Kabushiki Kaisha, Osaka, Japan
Filed Oct. 16, 1981, Ser. No. 312,369
Claims priority, application Japan, May 13, 1981, 56-20382
Term of patent 14 years
U.S. Cl. D32—50

274,856
WAX APPLICATOR MOP HEAD
William H. Smith, Holly Springs, and Ora K. Fields, Byhalia, both of Miss., assignors to Gem, Incorporated, Byhalia, Miss.
Filed Apr. 12, 1982, Ser. No. 368,023
Term of patent 14 years
U.S. Cl. D32—50



274,857
HAND HELD DUSTER
Sharon Hankins, 775 W. Sunnyoaks Ave., Campbell, Calif. 95008
Filed Sep. 3, 1982, Ser. No. 414,901
Term of patent 14 years
U.S. Cl. D32—51

274,858
COMBINED LOCKING PANEL AND SECURITY BOX
John D. Brush, Webster, and Britt C. Carpenter, Penfield, both of N.Y., assignors to John D. Brush & Co., Inc., Rochester, N.Y.
Filed Mar. 12, 1982, Ser. No. 357,705
Term of patent 14 years
U.S. Cl. D99—28



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF JULY, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Osakeyhtio: *See*—
Lahtinen, Seppo, 4,461,700, Cl. 209-136.000.

A. R. F. Products, Inc.: *See*—
Stolarczyk, Larry G., 4,462,022, Cl. 340-506.000.

AAR Corporation: *See*—
Pressell, Mark A., 4,461,131, Cl. 52-395.000.

AB Welin: *See*—
Nilsson, Per, 4,461,233, Cl. 114-378.000.

Abe, Toshihiro: *See*—
Kato, Tiharu; Nakamura, Hatsuo; Koguchi, Shigeo; Yonezawa, Toshio; and Abe, Toshihiro, 4,461,825, Cl. 430-273.000.

Abele, Werner, to Du Pont de Nemours, E. I., and Company. Process for toning image-wise modified surfaces. 4,461,822, Cl. 430-97.000.

Abildt, Uwe; and Langauer, Theodor, to Ciba-Geigy Corporation. Herbicidal mixtures. 4,461,641, Cl. 71-93.000.

Abrams, Jack S., to Union Special Corporation. Quick release mechanism for an automatic sewing machine workholder. 4,461,227, Cl. 112-121.150.

Acco Babcock Inc.: *See*—
Carney, Edward J., 4,461,216, Cl. 104-172.00B.

Achorn, G. Stanley: *See*—
Harris, James J.; Hostetler, Donald E.; and Achorn, G. Stanley, 4,461,846, Cl. 502-105.000.

Ackerley, Kenneth E.: *See*—
Dewar, Michael E.; Ackerley, Kenneth E.; and Carlson, Lawrence E., 4,461,085, Cl. 33-174.00L.

Action Group, Inc.: *See*—
Connell, Edwin A., 4,461,370, Cl. 182-153.000.

Adachi, Tomio; Katoh, Hideo; and Yamamoto, Atsushi, to Teijin Limited. Polyester film with projections and depressions on the surface. 4,461,797, Cl. 428-147.000.

Adams, Anton: *See*—
Schutze, Detlef-Ingo; and Adams, Anton, 4,461,911, Cl. 562-427.000.

Adams, Harold D. Family toilet seat. 4,461,046, Cl. 4-235.000.

Adamson, Lee E., to Taylor Freezer Company. Apparatus for dispensing dry powdered material. 4,461,405, Cl. 222-201.000.

Adelbratt, Kurt, to Aktiebolaget SKF. Device for providing a friction joint. 4,461,592, Cl. 403-8.000.

Adelman, Robert L., to Du Pont de Nemours, E. I., and Company. Polyvinylalcohol/melamine-formaldehyde interaction products. 4,461,858, Cl. 524-49.000.

Aero-Go, Inc.: *See*—
Mills, Charles J.; and Tracy, Steven E., 4,461,455, Cl. 254-3.00R.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Lefrancier, Pierre; Parant, Monique; Audibert, Francoise; Sache, Edgar; Chedid, Louis; Choay, Jean; and Lederer, Edgar, 4,461,761, Cl. 424-177.000.

Agence Spatiale Europeenne: *See*—
Leribaux, Henri R., 4,461,816, Cl. 429-191.000.

Agency of Industrial Science & Technology: *See*—
Ikeda, Shigeru; Hori, Shozi; Eguchi, Kiyohisa; Matsuo, Kanji; Zaima, Hidenori; Gamada, Yoshifumi; and Kondo, Teruhisa, 4,461,806, Cl. 428-408.000.

AGFA-Gevaert Aktiengesellschaft: *See*—
Bergthaller, Peter; Schenk, Gunther; and Wolfrum, Gerhard, 4,461,827, Cl. 430-562.000.

Aggen, George: *See*—
Borneman, Paul R.; and Aggen, George, 4,461,811, Cl. 428-677.000.

Agri-Systems: *See*—
Ostler, Earl W., 4,461,240, Cl. 119-51.00R.
Ostler, Earl W., 4,461,241, Cl. 119-51.00R.

Ahlstrom, Ross C., Jr., to Dow Chemical Company, The. Self regenerating catalytic reactor. 4,461,745, Cl. 422-197.000.

Aikman, Leslie N.: *See*—
Le Cover, Maurice, 4,461,308, Cl. 131-198.00R.

Air Products and Chemicals, Inc.: *See*—
Allam, Rodney J., 4,461,154, Cl. 62-87.000.

Airmachines: *See*—
Moiroux, August; and Bouvier, Maurice, 4,461,613, Cl. 417-285.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Iwasaki, Shinichiro, 4,461,264, Cl. 123-635.000.

Akesson, Yngve R.; Bengtsson, Bengt L.; and Bodenaes, Lars G., to Societe d'Assistance Technique pour Produits Nestle, S.A. Freezing of vegetables. 4,461,781, Cl. 426-524.000.

Aktiebolaget SKF: *See*—
Adelbratt, Kurt, 4,461,592, Cl. 403-8.000.

Albano, John V.; and Friedman, George, to Lummus Crest Inc. Processes for carrying out catalytic endothermic high-pressure gas reactions. 4,461,751, Cl. 423-372.000.

Albert-Frankenthal AG: *See*—
Herb, Rudolf, 4,461,467, Cl. 271-202.000.

Albrecht, Klaus: *See*—
Baumgart, Hans J.; Albrecht, Klaus; and Haub, Martin, 4,461,175, Cl. 73-295.000.

Alcon Laboratories, Inc.: *See*—
York, Billie M., Jr., 4,461,904, Cl. 548-315.000.

Alexeev, Mikhail S.: *See*—
Sirotin, Jury G.; Nikolaev, Stanislav V.; Gelfand, Lazar M.; Romanov, Pavel D.; Potapov, Valentin D.; Alexeev, Mikhail S.; Volkov, Evgeny A.; Yalevsky, Vladlen D.; Lukienko, Viktor G.; Popov, Anatoly G.; and Tupikov, Grigory A., 4,461,512, Cl. 299-42.000.

Alfs, Helmut; Boexkes, Werner; and Vangermain, Erwin, to Chemische Werke Huels A.G. Process for the production of p-tert-octyl phenol by catalytic alkylation of phenol. 4,461,916, Cl. 568-788.000.

Allaire, Ralph M., Jr. Universal bed covering or bed sheet apparatus. 4,461,048, Cl. 5-497.000.

Allam, Rodney J., to Air Products and Chemicals, Inc. Method and apparatus for compressing gas. 4,461,154, Cl. 62-87.000.

Alldredge, Robert L.: *See*—
Roth, Francis A., 4,461,378, Cl. 198-365.000.

Allegheny Ludlum Steel Corporation: *See*—
Borneman, Paul R.; and Aggen, George, 4,461,811, Cl. 428-677.000.

Allemand, Robert; Laval, Michel; and Parot, Pierre, to Commissariat a l'Energie Atomique. Portable computing device for measuring radiations. 4,461,952, Cl. 250-370.000.

Allemand, Robert; Gagelin, Jean-Jacques; and Tournier, Edmond, to Commissariat a l'Energie Atomique. X-Ray detector for detecting X-rays having passed through an object or organ. 4,461,953, Cl. 250-374.000.

Allen-Bradley Company: *See*—
Fulton, Donald E.; Curtiss, William P.; and Fejes, William T., Jr., 4,461,987, Cl. 318-800.000.

Allen, Greg; and Swift, Wesley. Heat exchanger. 4,461,344, Cl. 165-110.000.

Allen, James A.: *See*—
Flores, David P.; and Allen, James A., 4,461,864, Cl. 524-322.000.

Allied Corporation: *See*—
Daley, William D.; and Young, Robert D., 4,461,755, Cl. 423-573.00G.
Gantz, James L.; and Martin, Marcus C., 4,461,050, Cl. 15-3.000.
Norris, John; and Selden, Otto C., 4,461,554, Cl. 354-275.000.
Okazaki, Kenji, 4,461,741, Cl. 420-460.000.
Osterman, Harry F.; and Nylen, George C., 4,461,675, Cl. 203-24.000.
Tuccio, Sam A.; and Heller, Donald F., 4,461,686, Cl. 204-157.10R.
Ward, Kenneth R., 4,461,947, Cl. 219-121.0FS.

Allis-Chalmers Corporation: *See*—
Faulkner, Bobby P.; and Weinecke, Michael H., 4,461,674, Cl. 202-85.000.
Shuler, Bernard R., 4,461,205, Cl. 98-40.0DL.

Alneng, Carl-Goran. Elongate drawer with compartments for sliding mounting in cupboards, chests of drawers, racks or the like. 4,461,520, Cl. 312-330.00R.

Altman, Charles W. C., to Altman Stage Lighting Co., Inc. Spotlight and adjusting system. 4,462,067, Cl. 362-268.000.

Altman Stage Lighting Co., Inc.: *See*—
Altman, Charles W. C., 4,462,067, Cl. 362-268.000.

Alves dos Santos, Antonio M.; and Alves dos Santos, Helena Maria B. Inertia pen. 4,461,590, Cl. 401-115.000.

Alves dos Santos, Helena Maria B.: *See*—
Alves dos Santos, Antonio M.; and Alves dos Santos, Helena Maria B., 4,461,590, Cl. 401-115.000.

Amador Hydraulic Services Limited: *See*—
Amador, Joseph, 4,461,369, Cl. 182-2.000.

Amador, Joseph, to Amador Hydraulic Services Limited. Articulated boom and assembly therefor. 4,461,369, Cl. 182-2.000.

AMAF Industries Incorporated: *See*—
Spight, Carl, 4,462,046, Cl. 358-101.000.

American Cyanamid Company: *See*—
Bentley, Terence J., 4,461,914, Cl. 564-357.000.
Loffelman, Frank F.; and Brady, Thomas E., 4,461,861, Cl. 524-100.000.
Young, Chi C.; and De Maria, Francesco, 4,461,739, Cl. 264-176.00F.

American Fly Ash Company: *See*—
Pound, Joseph H., 4,461,601, Cl. 406-109.000.

American Home Products Corporation: *See*—
Klaubert, Dieter H., 4,461,900, Cl. 546-209.000.
Phillipps, Patrick G.; and Ma, Kenneth M., 4,461,302, Cl. 128-630.000.

Potoski, John R.; Schiehser, Guy A.; and Strike, Donald P., 4,461,901, Cl. 546-270.000.
Vannucci, Osvaldo, 4,461,406, Cl. 222-211.000.
American Metal Door Company, Inc.: *See*—
Hemmerling, Gene A., 4,461,120, Cl. 49-169.000.
American Petro Mart, Inc.: *See*—
Erickson, William R.; and Whitney, Solon G., 4,461,710, Cl. 210-675.000.
American Polywater Corporation: *See*—
Jonnes, Nelson, 4,461,712, Cl. 252-49.300.
American Safety Closure Corp.: *See*—
Conti, Vincent N., 4,461,392, Cl. 215-270.000.
American Standard Inc.: *See*—
Becky, Raymond, 4,462,069, Cl. 363-23.000.
American Sterilizer Company: *See*—
Karle, David A.; and Kralovic, Raymond C., 4,461,837, Cl. 435-296.000.
Thornton, David C., 4,461,097, Cl. 34-233.000.
Amey, David A.: *See*—
Gittos, Maurice W.; and Amey, David A., 4,461,771, Cl. 424-267.000.
AMP Incorporated: *See*—
Bakermans, Johannes C. W.; Grabbe, Dimitry G.; and Korsunsky, Iosif, 4,461,522, Cl. 339-17.00M.
Ampex Corporation: *See*—
Chan, Steven S., 4,462,051, Cl. 360-44.000.
Analogic Corporation: *See*—
Neumann, Leopold; Shapiro, Gerald N.; and Mattedi, Bruno A., 4,462,029, Cl. 340-825.500.
Anderson, Autrey: *See*—
Davis, J. C., 4,461,423, Cl. 239-231.000.
Anderson, Dallas A.; and Grayden, Harlan J., to Ognanovich, Michael W.; Anderson, Dallas A.; Langseth, Milfred A.; and Grayden, Harlan J. Wallboard trim apparatus. 4,461,135, Cl. 52-827.000.
Anderson, David A., to Boeing Company, The. Automatic or manual four-axes sanding machine system for sanding and/or finishing a vertically held contoured part. 4,461,124, Cl. 51-165.00R.
Anderson, John C.: *See*—
Kaye, Wilbur I.; Sun, Lilla S.; and Anderson, John C., 4,461,718, Cl. 252-408.100.
Anderson, John M., to General Electric Company. Shielded hollow cathode electrode for fluorescent lamp. 4,461,970, Cl. 313-240.000.
Anderson, Larry V.: *See*—
Davis, J. C., 4,461,423, Cl. 239-231.000.
Android Corporation: *See*—
Rine, William E., 4,461,381, Cl. 198-773.000.
Angele, Eugen; and Drechsel, Ludwig, to Pfaff Industriemaschinen GmbH. Device for pulling out and cutting off threads in a sewing machine. 4,461,229, Cl. 112-291.000.
Annovi, Giuseppe, to Dolomite S.p.A. Ski boot with an elastically inclinable leg portion. 4,461,103, Cl. 36-121.000.
Anthony, John, to Union Carbide Corporation. Poly-1-butene multilayers plastic film. 4,461,792, Cl. 428-35.000.
Anzai, Yoshinori: *See*—
Saikatsu, Takeo; Anzai, Yoshinori; Kajiwara, Toshiro; Kobayashi, Goroku; and Morimoto, Shunichi, 4,461,981, Cl. 315-246.000.
Anzenberger, Joseph F., Sr., to Stauffer Chemical Company. Acid-resistant phosphate ester functional fluids. 4,461,713, Cl. 252-49.900.
AO-Engineering A/S: *See*—
Oehlenschlager, Adam A.; and Einarsson, Baldvin, 4,461,054, Cl. 15-304.000.
Aoki, Eiichiro: *See*—
Hiyoshi, Teruo; Okamoto, Eisaku; Aoki, Eiichiro; Sugiura, Toshio; and Kozuki, Koichi, 4,461,199, Cl. 84-1.190.
Aoki, Katsuhiko: *See*—
Betsudan, Shinichi; Aoki, Katsuhiko; Sato, Shigeru; and Katagi, Takashi, 4,462,034, Cl. 343-761.000.
Aono, Shigeo: *See*—
Hosaka, Akio; and Aono, Shigeo, 4,461,257, Cl. 123-419.000.
Aono, Shunji: *See*—
Saji, Ikutaro; Yamazaki, Hiroshi; Aono, Shunji; Ichise, Katsuaki; and Okuda, Takao, 4,461,774, Cl. 424-273.00R.
Appareillages et Materiels de Servitudes (A.M.S.): *See*—
Hellouin de Menibus, Olivier, 4,461,180, Cl. 73-706.000.
Appelblatt, Irving; and Krawiecki, Peter, to Ex-Cell-O Corporation. Six-wheel armored vehicle. 4,461,202, Cl. 89-40.00B.
Applied Technologies Associates: *See*—
Van Steenwyk, Brett H., 4,461,088, Cl. 33-304.000.
Appor Limited: *See*—
Williamson, Audley B.; Banks, Stewart; and Rice, Frances J., 4,461,445, Cl. 248-551.000.
Arc Technologies Systems, Ltd.: *See*—
Zollner, Dieter; Lauterbach-Dammler, Inge; Rittman, Friedrich; and Schieber, Franz, 4,462,104, Cl. 373-93.000.
Arditty, Herve J.: *See*—
Shaw, Herbert J.; and Arditty, Herve J., 4,461,574, Cl. 356-350.000.
ARENCO-BMD Maschinenfabrik GmbH: *See*—
Muller, Gunter, 4,461,337, Cl. 164-181.000.
Argy, Gilles, to Technigaz. Storage tank for cryogenic liquefied gases such in particular as hydrogen. 4,461,398, Cl. 220-422.000.
Arisaki, Kenji, to Babcock-Hitachi, Ltd. Heat recovery process in coal gasification. 4,461,629, Cl. 48-210.000.
Armstrong World Industries, Inc.: *See*—
Lausch, Robert C., 4,461,802, Cl. 428-229.000.
Arneson Products, Inc.: *See*—
Selsted, Walter T., 4,461,704, Cl. 210-169.000.
Arvin Industries, Inc.: *See*—
Otterbein, Roy T., 4,461,733, Cl. 261-153.000.
Asahi Glass Company Ltd.: *See*—
Oda, Yoshio; Morimoto, Takeshi; and Matsubara, Toshiya, 4,461,682, Cl. 204-98.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Mori, Koichi; and Nakao, Masafumi, 4,461,807, Cl. 428-469.000.
Aschwanden, Werner; and Kyburz, Emilio, to Hoffmann-La Roche Inc. Pyrrolidine 2-one derivatives. 4,461,906, Cl. 548-406.000.
Ascoe Felts, Inc.: *See*—
Booth, Ian K.; and Cunnane, Frank J., III, 4,461,803, Cl. 428-234.000.
ASEA AB: *See*—
Sundberg, Yngve, 4,461,338, Cl. 164-466.000.
Ashley, Robert J., Sr.; and Herrick, William H., to Brooks & Perkins, Inc. Tension release. 4,461,437, Cl. 244-137.00R.
Ashton, Gregory J.: *See*—
Duckett, Melvyn; Ashton, Gregory J.; and Salisbury, David R., 4,461,634, Cl. 62-11.000.
ASQ Boats, Inc.: *See*—
Liu, Donghwa, 4,461,617, Cl. 432-253.000.
Astroth, Gary D.; and Miller, Allen F., to Astroth, Mark E. System for adding realism to video display. 4,461,470, Cl. 272-17.000.
Astroth, Mark E.: *See*—
Astroth, Gary D.; and Miller, Allen F., 4,461,470, Cl. 272-17.000.
AT&T Bell Laboratories: *See*—
Celler, George K.; Lischner, David J.; and Robinson, McDonald, 4,461,670, Cl. 156-603.000.
Cox, Donald C.; and Saleh, Adel A. M., 4,462,004, Cl. 330-277.000.
AT&T Technologies, Inc.: *See*—
Bland, Randall J.; Butler, Ronald W.; and Horton, Samuel F., 4,462,016, Cl. 336-192.000.
Harringer, Robert V.; Nadherny, Frank J.; and Rada, Robert O., 4,461,073, Cl. 29-741.000.
Jabben, Gary D., 4,461,934, Cl. 200-5.00A.
Seaman, Gary G., 4,461,197, Cl. 83-152.000.
Ateliers des Charmilles S.A.: *See*—
Delpretti, Roger, 4,461,942, Cl. 219-69.00W.
Atlantic Richfield Company: *See*—
Gay, Charles F.; Kapur, V. K.; and Wilson, James H., 4,461,922, Cl. 136-249.000.
Wunderlich, Donald K., 4,461,349, Cl. 166-245.000.
Audibert, Francoise: *See*—
Lefrancier, Pierre; Parant, Monique; Audibert, Francoise; Sache, Edgar; Chedid, Louis; Choay, Jean; and Lederer, Edgar, 4,461,761, Cl. 424-177.000.
Auer, Mark J. Manufacturing fiberboard ducts. 4,461,664, Cl. 156-204.000.
Augat Inc.: *See*—
Breed, Richard A., III; Doyle, Henry W.; and Roberts, Harold A., 4,461,538, Cl. 350-96.200.
Augustin, Ulrich, to Daimler-Benz Aktiengesellschaft. Method and apparatus for measuring the quantities of fuel injected by injection pumps for internal combustion engines. 4,461,169, Cl. 73-119.00A.
Autenrieth, Karl: *See*—
Rottenkolber, Ludwig; and Autenrieth, Karl, 4,461,189, Cl. 74-489.000.
Autoflug GmbH: *See*—
Butenop, Klaus, 4,461,434, Cl. 242-107.40B.
Automation International Corp.: *See*—
Peters, Alan R., 4,461,779, Cl. 426-516.000.
Autret, Lucien; and Godfrin, Jean-Philippe, to Societe Nationale des Poudres et Explosifs. Luminous autodispersable pyrotechnic device. 4,461,213, Cl. 102-335.000.
Avrea, Walter C. Method and apparatus for automatically refilling a leaking liquid cooling system as an engine operates by utilizing a radiator and a remote coolant reservoir. 4,461,342, Cl. 165-104.320.
Ayata, Naoki: *See*—
Hatanaka, Katsunori; Hirai, Yutaka; Ayata, Naoki; and Uzawa, Shunichi, 4,461,956, Cl. 250-578.000.
B. F. Goodrich Company, The: *See*—
Kroenke, William J.; and Nicholas, Paul P., 4,461,919, Cl. 570-224.000.
Maass, William D., 4,461,421, Cl. 238-8.000.
Yang, Henry W., 4,461,869, Cl. 525-80.000.
Baba, Kiyokazu, to Kabushiki Kaisha Komatsu Seisakusho. Crown structure for a three-pillar type press. 4,461,206, Cl. 100-208.000.
Babcock-Hitachi, Ltd.: *See*—
Arisaki, Kenji, 4,461,629, Cl. 48-210.000.
Bacardit, Juan S., to Bendiberica S.A. Rotary hydraulic distributor for hydraulic power-drive systems. 4,461,321, Cl. 137-625.210.
Bach, Erik, to Interlego A.G. Connecting member. 4,461,116, Cl. 446-128.000.
Bactex, Inc.: *See*—
Brinton, Charles C.; and McMichael, John C., 4,461,838, Cl. 436-511.000.
Baier, Erich; Koefferlein, Rainer; and Schlageter, Bernhard, to Siemens Aktiengesellschaft. Magnetic brush developing station. 4,461,238, Cl. 118-658.000.
Bailey, Fay W.; and Whitte, William M., to Phillips Petroleum Company. Ethylene polymer blends. 4,461,873, Cl. 525-240.000.
Bailey, James R.; and Long, Eric L., to Switchcraft, Inc. Fiber optic connector assembly with slidable spacer. 4,461,539, Cl. 350-96.210.
Bailey, William D., to Stimtech, Inc. Method of making a stimulating electrode. 4,461,075, Cl. 29-825.000.

Bailly, Richard L. Molded odor-absorbing laminate. 4,461,099, Cl. 36-44.000.

Baker, George A.: *See*—
Sattelberg, Stanley E.; and Baker, George A., 4,461,399, Cl. 220-444.000.

Bakermans, Johannes C. W.; Grabbe, Dimitry G.; and Korsunsky, Iosif, to AMP Incorporated. Zero insertion force connector for a circuit board. 4,461,522, Cl. 339-17.00M.

Bakoledis, Andrew G.: *See*—
Schandle, Alfred J.; and Bakoledis, Andrew G., 4,461,221, Cl. 109-6.000.

Baldwin, David R.; and Lemak, Nicholas S., to Honeywell Information Systems Inc. Digital phase-locked loop. 4,462,110, Cl. 377-43.000.

Baldwin-Gegenheimer Corporation: *See*—
MacPhee, John; Gasparrini, C. Robert; and Wirth, David, 4,461,210, Cl. 101-363.000.

Ball, Lawrence E.: *See*—
Wu, Mu-Yen M.; and Ball, Lawrence E., 4,461,885, Cl. 528-310.000.

Baltek Corporation: *See*—
Kohn, Henri A., 4,461,666, Cl. 156-222.000.

Balz, Gunther W., to Roto-Finish Company, Inc. Finishing apparatus with automatically-variable vibrogyratory intensity and/or direction. 4,461,122, Cl. 51-163.200.

Bangs, Richard G.; and Thomas, Jacob E., to NCR Corporation. Ink level control for ink jet printer. 4,462,037, Cl. 346-140.00R.

Banks, Arthur J.: *See*—
Hacke, Joseph F.; Banks, Arthur J.; and Bazin, Lucas J., 4,461,962, Cl. 307-265.000.

Banks, Stewart: *See*—
Williamson, Audley B.; Banks, Stewart; and Rice, Frances J., 4,461,445, Cl. 248-551.000.

Banos, Zoltan; Takacs, Istvan; Vereczkey, Endre; and Vigh, Dezso, to Richter Gedeon Vegyeszeti Gyar R.T. Apparatus for transfer of liquid and for removal of gases separating from liquids. 4,461,632, Cl. 55-190.000.

Barbagli, Rino O., to Fiat Allis Europe S.p.A. Manually operable hydraulic control device with hydraulic position retention. 4,461,320, Cl. 137-625.600.

Barbarin, Michel; and Dufau, Ghislain, to Seppic. Use of fatty amines to improve the properties of foams and improved foaming containing said amines. 4,461,716, Cl. 252-307.000.

Barber, James J., to Halcon SD Group, Inc., The. Process for the preparation of squaric acid by the electrolysis of carbon monoxide in anhydrous aliphatic nitrile solvent media. 4,461,681, Cl. 204-59.00R.

Barinov, Vitaly N.: *See*—
Gavrilov, Alexei G.; Galitskaya, Galina K.; Zhed, Viktor P.; Sinelschikov, Andrei K.; Padalka, Valentin G.; Boyarunas, Albert M.; Panin, Vyacheslav N.; and Barinov, Vitaly N., 4,461,799, Cl. 428-210.000.

Barker, Anthony M.; and Lockhart, Robert N., to Kent Heating Limited. Stove. 4,461,273, Cl. 126-77.000.

Barnick, John F. Multi-machine cutter holder. 4,461,195, Cl. 82-36.00R.

Baron, Neville A. Apparatus and process for recurving the cornea of an eye. 4,461,294, Cl. 128-303.100.

Barr & Stroud Limited: *See*—
Runciman, Herbert M., 4,461,534, Cl. 350-6.800.

Barrat, Michel: *See*—
Dong, Charles W.; and Barrat, Michel, 4,462,054, Cl. 360-106.000.

Barriuso, Jean-Pierre: *See*—
Durand, Guy; and Barriuso, Jean-Pierre, 4,461,528, Cl. 339-98.000.

Bartl, Max: *See*—
Eichinger, Johann; Strehler, Richard; and Bartl, Max, 4,461,367, Cl. 180-252.000.

BASF Aktiengesellschaft: *See*—
Gimpel, Juergen; Schwendemann, Volker; Schenck, Hans-Uwe; and Gulbins, Erich, 4,461,880, Cl. 525-528.000.
Goettsche, Reimer; and Marx, Hans-Norbert, 4,461,721, Cl. 252-607.000.
Magin, Rudolf; Nenninger, Franz; and Engert, Gerd-Juergen, 4,461,327, Cl. 141-1.000.
Tschang, Chung-Ji; Klefenz, Heinrich; Sanner, Axel; and Zahn, Wolfgang, 4,461,832, Cl. 435-176.000.

Batchelor, John F.; Bauer, Denis J.; Hodson, Harold F.; Selway, John W. T.; and Young, David A. B. Amino-substituted flavans useful as anti-viral agents. 4,461,907, Cl. 549-406.000.

Bateson, Norman E., to Norson Industries, Inc. Single lever hatch cover. 4,461,219, Cl. 105-377.000.

Battelle Memorial Institute: *See*—
Sherman, Rand C.; and Kenan, Richard P., 4,461,533, Cl. 350-372.000.

Batzer, Hans; and Sinnreich, Joel, to Ciba-Geigy Corporation. Separation of polyvalent cations by transport through liquid membrane. 4,461,709, Cl. 210-643.000.

Bauer, Denis J.: *See*—
Batchelor, John F.; Bauer, Denis J.; Hodson, Harold F.; Selway, John W. T.; and Young, David A. B., 4,461,907, Cl. 549-406.000.

Bauer, Gerald L.: *See*—
Chowdhury, Ajit K.; Bauer, Gerald L.; and Lehmann, Richard W., 4,461,743, Cl. 422-129.000.

Bauer, Ronald S.; and Corley, Larry S., to Shell Oil Company. Curable saturated polyepoxide-triglycidyl cyanurate compositions. 4,461,879, Cl. 525-526.000.

Baughman, Richard C.; and Bump, David S., to Eastman Kodak Company. Apparatus for moving an adhesive applicator. 4,461,404, Cl. 222-148.000.

Baulmann, Wilhelm L., to Hermann Wiederhold GmbH. Electron beam curing of unsaturated coating materials. 4,461,784, Cl. 427-44.000.

Baumann, Hans, to Grob & Co. Aktiengesellschaft. Warp stop motion device of a weaving machine. 4,461,326, Cl. 139-369.000.

Baumgart, Hans J.; Albrecht, Klaus; and Haub, Martin, to VDO Adolf Schindling AG. Liquid level scale changeover measuring apparatus. 4,461,175, Cl. 73-295.000.

Baumgartner, George C. Surgical instrument and process. 4,461,280, Cl. 128-1.200.

Baumgartner, Siegfried: *See*—
Hultsch, Gunther; Baumgartner, Siegfried; Bock, Harald; and Schilp, Reinhold, 4,461,093, Cl. 34-8.000.

Bayer Aktiengesellschaft: *See*—
Lindner, Christian; Ott, Karl-Heinz; Peters, Horst; Buekers, Josef; and Neuray, Dieter, 4,461,868, Cl. 525-67.000.
Schmidt, Adolf, 4,461,863, Cl. 524-157.000.
Schutze, Detlef-Ingo; and Adams, Anton, 4,461,911, Cl. 562-427.000.
Siegers, Gunter, 4,461,706, Cl. 210-275.000.

Bayerische Motoren Werke Aktiengesellschaft: *See*—
Melzer, Harald; and Hahn, Joachim, 4,461,062, Cl. 29-156.70R.

Bazin, Lucas J.: *See*—
Hacke, Joseph F.; Banks, Arthur J.; and Bazin, Lucas J., 4,461,962, Cl. 307-265.000.

BBC Brown, Boveri & Company, Limited: *See*—
Erni, Peter; Kogelschatz, Ulrich; Strassler, Sigfrid; and Wiesmann, Hans-Jurg, 4,461,744, Cl. 422-186.180.
Riegger, Helena; Schwander, Jorg; and Volks, Gunter, 4,461,244, Cl. 122-441.000.

Beaumont, Paul, to Girling Midland-Ross Air Actuation Limited. Fluid pressure valve. 4,461,313, Cl. 137-102.000.

Beauvais, Rene G., to RWC Inc. Process for forming welded prepainted metal appliance cabinet walls. 4,461,943, Cl. 219-93.000.

Bebelaar, Dick: *See*—
Salour, Michael M.; Roxlo, Charles B.; and Bebelaar, Dick, 4,462,103, Cl. 372-35.000.

Becker, Norbert: *See*—
Hildebrandt, Norbert; and Becker, Norbert, 4,461,519, Cl. 312-257.00A.

Becker, Wolfram; Clement, Albrecht; and Daumer, Rolf, to Robert Bosch GmbH. Regulating device for a fuel metering system of an internal combustion engine. 4,461,258, Cl. 123-440.000.

Beckman Instruments, Inc.: *See*—
Kaye, Wilbur I.; Sun, Lilla S.; and Anderson, John C., 4,461,718, Cl. 252-408.100.

Becky, Raymond, to American Standard Inc. d.c. To d.c. voltage regulator having an input protection circuit, a d.c. to d.c. inverter, a saturable reactor regulator, and main and auxiliary rectifying and filtering circuits. 4,462,069, Cl. 363-23.000.

Becton Dickinson and Company: *See*—
North, Howard L., Jr., 4,461,181, Cl. 73-749.000.

Beemer, Jerry L. Tire changing hand tool. 4,461,335, Cl. 157-1.220.

Behrens, Horst, to Gesellschaft fur Strahlen- und Umweltforschung mbH. Method for separating and collecting iodine. 4,461,711, Cl. 210-757.000.

Bekkala, Andrew H.; and Garrett, Wayne H., to Eaton Corporation. Caliper guide assembly for disc brakes. 4,461,372, Cl. 188-73.340.

Bell Helmets Inc.: *See*—
Reiterman, Donald R.; and Sundahl, James G., 4,461,044, Cl. 2-421.000.

Bell Telephone Laboratories, Incorporated: *See*—
Marcatili, Enrique A. J., 4,461,535, Cl. 350-96.140.
York, Harold L., 4,462,077, Cl. 364-300.000.

Belokin, Paul, Jr. Integral spring clip support assembly for displaying articles. 4,461,387, Cl. 211-71.000.

Ben Clements & Sons, Inc.: *See*—
Furutsu, Akira, 4,461,417, Cl. 227-67.000.

Bendiberica S.A.: *See*—
Bacardit, Juan S., 4,461,321, Cl. 137-625.210.

Bendix/Allied Corporation: *See*—
Davis, Alan L.; and Punsko, Stephen, 4,461,531, Cl. 339-258.00R.

Bendix Corporation: *See*—
Brush, Robert W., Sr.; and Piscitelli, R. Amelia, 4,461,530, Cl. 339-258.00R.
Gallusser, David O.; MacAvoy, David W.; Punsko, Stephen; and Frear, David L., 4,461,526, Cl. 339-89.00M.

Bengtsson, Bengt L.: *See*—
Akesson, Yngve R.; Bengtsson, Bengt L.; and Bodenaes, Lars G., 4,461,781, Cl. 426-524.000.

Bennett, Adam J.: *See*—
Thayer, William L.; Bennett, Adam J.; Kutowy, Oleh; and Sourirajan, Srinivasa, 4,461,707, Cl. 210-321.100.

Bentley, Terence J., to American Cyanamid Company. Method for the preparation of 1-(4'-amino-3',5'-dichlorophenyl)-2-alkyl(or dialkyl-)aminoethanols. 4,461,914, Cl. 564-357.000.

Berchem, Rutger, to Berchem & Schaberg GmbH. Rotary stone-cutting head. 4,461,513, Cl. 299-88.000.

Berchem & Schaberg GmbH: *See*—
Berchem, Rutger, 4,461,513, Cl. 299-88.000.

Berg, Melvin J.: *See*—
Grashow, Joseph; Berg, Melvin J.; Dubovy, Joseph L.; and Grashow, Stanley J., 4,462,033, Cl. 343-715.000.

Berg, Robin L., to Proform, Inc. Lightweight marine barge cover. 4,461,232, Cl. 114-201.00R.

Bergmann, Ewald: *See*—
Schneider, Franz; Bergmann, Ewald; Kurz, Otto; and Dommer, Hans-Martin, 4,461,068, Cl. 29-568.000.

Bergthaller, Peter; Schenk, Gunther; and Wolfrum, Gerhard, to AG-FA-Gevaert Aktiengesellschaft. Color photographic recording material containing a non-diffusible dye releaser from which a complexible azo dye is released during development. 4,461,827, Cl. 430-562.000.

Berneking, Hans-Jurgen; and Rabe, Wilhelm, to P.A. Rentrop, Hubbert & Wagner Fahrzeugausstattungen. Vehicle seat fitting. 4,461,511, Cl. 297-355.000.

Betsudan, Shinichi; Aoki, Katsuhiko; Sato, Shigeru; and Katagi, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Antenna system with plural horn feeds. 4,462,034, Cl. 343-761.000.

Better Methods, Inc.: *See*—
Goldfinch, Arthur L., 4,461,562, Cl. 355-3.0DD.

Bezdek, Thomas G., to United States of America, Air Force. Isolated load switching with surge suppression. 4,461,955, Cl. 250-551.000.

Biemans, Arnoldus. Sewing machine needle threader. 4,461,409, Cl. 223-99.000.

Bierman, Laurence W.; and Polinsky, Samual M., to J. R. Simplot Co. Reduction of iron in a reductive stripping process for the recovery of uranium from wet process phosphoric acid. 4,461,746, Cl. 423-8.000.

Binet, Rejean; Cribb, William E.; Edmonds, Anthony C. F.; and McNicol, Melvin A., to C-I-L Inc. Bulk manufacture of emulsion explosives. 4,461,660, Cl. 149-2.000.

Bischoff, Dieter; and Favorite, Armando, to Carl Freudenberg, Firma. Floor covering and method for installing a floor covering. 4,461,794, Cl. 428-57.000.

Bitter, Istvan: *See*—
Hermecz, Istvan; Meszaros, Zoltan; Breining, Tibor; Virag, Sandor; Vasvari nee Debreczy, Lelle; Horvath, Agnes; Nagy, Gabor; Mandi, Attila; Szucs, Tamas; Bitter, Istvan; and Sebestyen, Gyula, 4,461,769, Cl. 424-251.000.

BKMI Industrieanlagen GmbH: *See*—
Roth, Gunter; Quittkat, Wolfram; Frank, Dieter; Muller, Ludwig; and Grassmann, Wilhelm, 4,461,645, Cl. 106-100.000.

Black, Milton W., to Northern Leader, Inc. Means for heating water by wood burning. 4,461,242, Cl. 122-15.000.

Black, William L., to United States of America, Navy. Cartridge loaded hybrid propellant. 4,461,214, Cl. 102-440.000.

Blaha, Erich, to Carl-Zeiss-Stiftung. Portable ophthalmological instrument for selective examination of anterior or posterior regions of the eye. 4,461,551, Cl. 351-214.000.

Blake, John J.: *See*—
De Freitas, Richard E.; and Blake, John J., 4,462,106, Cl. 375-30.000.

Blanchard, Robert L.: *See*—
Curless, Richard W.; and Blanchard, Robert L., 4,461,950, Cl. 219-368.000.

Bland, Randall J.; Butler, Ronald W.; and Horton, Samuel F., to AT&T Technologies, Inc. Inductor coils with mechanically coupleable bobbins. 4,462,016, Cl. 336-192.000.

Bloeck, Siegfried: *See*—
Stanek, Oldrich; and Bloeck, Siegfried, 4,461,605, Cl. 413-8.000.

Blohm, Alan J.: *See*—
Jackson, Leon D.; Morris, Dan O.; and Blohm, Alan J., 4,462,055, Cl. 360-118.000.

Blok, Huibert, to U.S. Philips Corporation. Supply system. 4,462,071, Cl. 363-44.000.

Blok, Lyubov; and Jewell, David G., to W. H. Brady Co. Printable coating for heatshrinkable materials. 4,461,793, Cl. 428-36.000.

Bloomer, Milton D., to General Electric Company. Phase control circuit for low voltage load. 4,461,990, Cl. 323-235.000.

Blumenthal, Rafael, to Elscint Incorporated. Apparatus and method for examining a body, particularly useful in tomography. 4,462,111, Cl. 378-014.000.

Bock, Harald: *See*—
Hultsch, Gunther; Baumgartner, Siegfried; Bock, Harald; and Schilp, Reinhold, 4,461,093, Cl. 34-8.000.

Bock, Jan; McCall, Patrick P.; Robbins, Max L.; and Siskin, Michael, to Exxon Research and Engineering Co. Shale-oil recovery process. 4,461,696, Cl. 208-11.0LE.

Boda, Robert H., to Heil Co., The. Rear loader container tipper. 4,461,608, Cl. 414-408.000.

Bodenaes, Lars G.: *See*—
Akesson, Yngve R.; Bengtsson, Bengt L.; and Bodenaes, Lars G., 4,461,781, Cl. 426-524.000.

Bodenseewerk Geratetechnik GmbH: *See*—
Krogmann, Uwe, 4,461,089, Cl. 33-324.000.

Bodenseewerk Perkin-Elmer & Co., GmbH: *See*—
Schoffel, Rainer, 4,461,185, Cl. 73-864.010.

Bodovsky, Paul W., to Continental Conveyor & Equipment Co., Inc. Air filtering machinery with variable speed cleaning. 4,461,633, Cl. 55-283.000.

Boehringer Mannheim GmbH: *See*—
Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Neubert, Peter, 4,461,763, Cl. 424-182.000.

Boeing Company, The: *See*—
Anderson, David A., 4,461,124, Cl. 51-165.00R.
Dontscheff, Helmut, 4,461,669, Cl. 156-574.000.
Hanger, Randolph T., 4,461,127, Cl. 51-330.000.
Mills, Charles J.; and Tracy, Steven E., 4,461,455, Cl. 254-3.00R.
Turner, Bernus G., 4,461,449, Cl. 251-62.000.

Boexkes, Werner: *See*—
Alfs, Helmut; Boexkes, Werner; and Vangermain, Erwin, 4,461,916, Cl. 568-788.000.

Bogese, Stephen B., II, to Virginia Patent Development Corporation. Round shielded cable and modular connector therefor. 4,461,923, Cl. 174-36.000.

Bohm & Braunwalder KG: *See*—
Schnalke, Heinz H., 4,461,094, Cl. 34-9.000.

Bojicic, Savo. Multiple impact putter. 4,461,482, Cl. 273-183.00D.

Boni, Richard R., to McGraw-Edison Company. Fail-safe hydraulically operated circuit breaker accumulator arrangement. 4,461,937, Cl. 200-82.00B.

Booth, Ian K.; and Cunnane, Frank J., III, to Ascoe Felts, Inc. Papermaker's felt having multi-layered base fabric. 4,461,803, Cl. 428-234.000.

Borg-Warner Corporation: *See*—
Lech, Thaddeus, Jr.; and Weage, Kenneth A., deceased, 4,461,376, Cl. 192-106.200.

Borneman, Paul R.; and Aggen, George, to Allegheny Ludlum Steel Corporation. Stabilized ferritic stainless steel with improved brazeability. 4,461,811, Cl. 428-677.000.

Bounds, William E. Flag waving machine. 4,461,234, Cl. 116-173.000.

Bourget, Jean-Claude, to Les Cables de Lyon. Method for sequentially annealing and then hardening long metal components made of fine or special steel. 4,461,658, Cl. 148-127.000.

Bouvier, Maurice: *See*—
Moiroux, August; and Bouvier, Maurice, 4,461,613, Cl. 417-285.000.

Bowden, Edgar A.; and Prior, Maurice J., to Mobil Oil Corporation. Method and apparatus for determining angle of inclination of seismometer and leveling seismic motion detectors. 4,462,094, Cl. 367-188.000.

Bowman, Gary K., to United States of America, Energy. Cleaning process for corrugated aluminum electrical transmission line enclosure. 4,461,126, Cl. 51-313.000.

Bowsky, Benjamin; and Honkamp, Glenn A., to Emerson Electric Co. Hermetic refrigeration terminal. 4,461,925, Cl. 174-152.0GM.

Boyarunas, Albert M.: *See*—
Gavrilov, Alexei G.; Galitskaya, Galina K.; Zhed, Viktor P.; Sinelschikov, Andrei K.; Padalka, Valentin G.; Boyarunas, Albert M.; Panin, Vyacheslav N.; and Barinov, Vitaly N., 4,461,799, Cl. 428-210.000.

Boyce, Pamela J.: *See*—
Willis, Stephen B.; and Boyce, Pamela J., 4,461,856, Cl. 523-401.000.

Bozack, Tomas J.: *See*—
Doerr, Joseph E.; and Bozack, Tomas J., 4,461,553, Cl. 352-39.000.

Brachet, Roland. Propulsion device and a method of propelling a nautical vessel. 4,461,620, Cl. 440-38.000.

Brady, Thomas E.: *See*—
Loffelman, Frank F.; and Brady, Thomas E., 4,461,861, Cl. 524-100.000.

Brakelmann, Wolfgang, to Holstein und Kappert GmbH. Double seat valve. 4,461,318, Cl. 137-614.190.

Bramer, Walter C., to Lacks Industries, Inc. Gear operated remote control mirror and operative control. 4,461,190, Cl. 74-501.00M.

Brammall, Inc.: *See*—
Van Gompel, James, 4,461,160, Cl. 70-100.000.

Brannstrom, Lars; and Pedersen, Karsten. Sterile water collector. 4,461,186, Cl. 73-864.620.

Bransome, Edwin D., Jr.: *See*—
Hendry, Lawrence B.; Bransome, Edwin D., Jr.; Hutson, Marion S.; and Campbell, Lillian K., 4,461,619, Cl. 434-295.000.

Brastow, Carl H., to White Cap Enterprises Corporation. Walker. 4,461,471, Cl. 272-70.300.

Braun, Fritz, to Hasler AG Bern. Error source excluding data transmission system. 4,462,099, Cl. 371-22.000.

Brauning, Horst: *See*—
Motzer, Willi; and Brauning, Horst, 4,461,121, Cl. 51-3.000.

Breed, Richard A., III; Doyle, Henry W.; and Roberts, Harold A., to Augat Inc. Active receptacle having resilient sleeve-like bushing. 4,461,538, Cl. 350-96.200.

Breining, Tibor: *See*—
Hermecz, Istvan; Meszaros, Zoltan; Breining, Tibor; Virag, Sandor; Vasvari nee Debreczy, Lelle; Horvath, Agnes; Nagy, Gabor; Mandi, Attila; Szucs, Tamas; Bitter, Istvan; and Sebestyen, Gyula, 4,461,769, Cl. 424-251.000.

Breuer, Hermann; Treuner, Uwe D.; and Denzel, Theodor, to E. R. Squibb & Sons, Inc. Iminothiazolyl ureido cephalosporins. 4,461,767, Cl. 424-246.000.

Brewer, Michael W.: *See*—
Shorter, John J.; and Brewer, Michael W., 4,461,045, Cl. 3-32.000.

Bridges, Charles D.: *See*—
Soland, John P.; and Bridges, Charles D., 4,461,450, Cl. 251-63.500.

Bridgestone Tire Company Limited: *See*—
Fukahori, Yoshihide; Morimura, Yasuhiro; Fujio, Ryota; and Fukuura, Yukio, 4,461,796, Cl. 428-116.000.
Ogawa, Masaki, 4,461,795, Cl. 428-64.000.
Tansei, Hikaru; Kajimoto, Katsuhiko; and Nomata, Mikio, 4,461,334, Cl. 152-209.00R.

Briens, Cedric L.; and Sankey, Bruce M., to Exxon Research and Engineering Co. Solvent dewaxing waxy hydrocarbon distillate oils using a combination wax-naphthalene condensate and poly-dialkylfumarate/vinyl acetate copolymer dewaxing aid. 4,461,698, Cl. 208-33.000.

Briggs, Earl C. Bag holder. 4,461,441, Cl. 248-100.000.

Brigham Young University: *See*—
Robins, Roland K.; and Srivastava, Prem C., 4,461,891, Cl. 536-55.000.

Brinton, Charles C.; and McMichael, John C., to Bactex, Inc. Gonococcal Pili processes for the preparation thereof and the use thereof for the detection of and prevention of infections caused by *Neisseria gonorrhoeae*. 4,461,838, Cl. 436-511.000.

Brisseau, Christian: *See*—
Reymond, Jean C.; and Brisseau, Christian, 4,462,042, Cl. 358-22.000.

Bristol-Myers Company: *See*—
Matson, James A.; Myllymaki, Robert W.; Doyle, Terrence W.; and Bush, James A., 4,461,831, Cl. 435-119.000.
Menard, Marcel; and Martel, Alain, 4,461,727, Cl. 260-239.00A.

Britax-Excelsior Limited: *See*—
Cunningham, Douglas J.; and Gilkes, Harry W., 4,461,510, Cl. 297-250.000.

Brite, Alan D. Insecticide including powdered boric acid. 4,461,758, Cl. 424-10.000.

British American Bank Note Inc.: *See*—
Small, Edward A.; and Wright, Geoff C., 4,462,039, Cl. 346-206.000.

British Gas Corporation: *See*—
Hebden, Dennis; and Brooks, Charles T., 4,461,628, Cl. 48-197.00R.

Britt, Roger W., to Northern Telecom Limited. Amplifier for electronic and electro-mechanical transmitters. 4,461,929, Cl. 179-81.00B.

Brooks, Charles T.: *See*—
Hebden, Dennis; and Brooks, Charles T., 4,461,628, Cl. 48-197.00R.

Brooks & Perkins, Inc.: *See*—
Ashley, Robert J., Sr.; and Herrick, William H., 4,461,437, Cl. 244-137.00R.

Brother Kogyo Kabushiki Kaisha: *See*—
Onishi, Heizo, 4,461,662, Cl. 156-73.400.

Brothers, Lance E.: *See*—
Childs, Jerry D.; Brothers, Lance E.; and Murphey, Joseph R., 4,461,644, Cl. 106-76.000.

Brown, Daniel G.: *See*—
Motsinger, Donald L.; and Brown, Daniel G., 4,461,804, Cl. 428-288.000.

Brown, David: *See*—
Rowe, Frederick; and Brown, David, 4,461,742, Cl. 422-129.000.

Brown, Lawrence G. One-way transmission system for bicycles or the like. 4,461,375, Cl. 192-45.000.

Brunner, Jean-Michel; and Deschamps, Daniel, to Fichet-Bauche. Installation for protection against break-ins. 4,461,222, Cl. 109-29.000.

Brunswick Corporation: *See*—
Sheaffer, Benjamin L., 4,461,251, Cl. 123-317.000.

Brush, Robert W., Sr.; and Piscitelli, R. Amelia, to Bendix Corporation. Socket contact for electrical connectors and method of manufacture. 4,461,530, Cl. 339-258.00R.

Bruzzese, Tiberio: *See*—
Dell'Acqua, Ernani; Bruzzese, Tiberio; and Ferrari, Lorenzo, 4,461,768, Cl. 424-246.000.

Buekers, Josef: *See*—
Lindner, Christian; Ott, Karl-Heinz; Peters, Horst; Buekers, Josef; and Neuray, Dieter, 4,461,868, Cl. 525-67.000.

Bump, David S.: *See*—
Baughman, Richard C.; and Bump, David S., 4,461,404, Cl. 222-148.000.

Bundy, Gordon L., to Upjohn Company, The. 9-Deoxy-9-methylene-PGE compounds. 4,461,917, Cl. 568-807.000.

Bunker-Ramo Corporation: *See*—
Holt, Harley R., 4,461,074, Cl. 29-749.000.

Buras, Allen M.; and Prest, Robert E., III. Hydraulic well cap. 4,461,354, Cl. 166-343.000.

Burba, John L., III, to Dow Chemical Company, The. Method of making crystalline 2-layer lithium aluminates in ion exchange resins. 4,461,714, Cl. 252-184.000.

Burdych, Jiri: *See*—
Janda, Jiri; Burdych, Jiri; Lab, Miroslav; and Dlabal, Pavel, 4,462,097, Cl. 369-248.000.

Burgess, Rollie M. Adjustable bar lock. 4,461,502, Cl. 292-262.000.

Burmeister, Rainer: *See*—
Ewaldt, Helmut; Raabe, Gerhard; Sauermann, Heinz; and Burmeister, Rainer, 4,462,019, Cl. 338-15.000.

Burndy Corporation: *See*—
Cheh, Ernest L., 4,461,416, Cl. 226-1.000.

Burnett, Robert A. Reusable, modular, knockdown container. 4,461,395, Cl. 217-12.00R.

Burroughs Corporation: *See*—
Peter, Emmett B., III; and Rayfield, Wilson P., 4,461,468, Cl. 271-308.000.

Bury, George J., to Illinois Tool Works Inc. Drop wire clamp. 4,461,059, Cl. 24-129.00R.

Bush, James A.: *See*—
Matson, James A.; Myllymaki, Robert W.; Doyle, Terrence W.; and Bush, James A., 4,461,831, Cl. 435-119.000.

Bush Universal, Inc.: *See*—
LeBaron, Steven M., 4,461,101, Cl. 36-76.00C.

Bustos, Rafael T., to Leggett & Platt, Incorporated. Slip surface shelf merchandiser. 4,461,388, Cl. 211-49.00D.

Butenop, Klaus, to Autoflug GmbH. Self-locking belt reeling mechanism for buckle-on safety belts in passenger-carrying vehicles. 4,461,434, Cl. 242-107.40B.

Butler, Ronald W.: *See*—
Bland, Randall J.; Butler, Ronald W.; and Horton, Samuel F., 4,462,016, Cl. 336-192.000.

Butt, Sheldon H., to Olin Corporation. Semiconductor casing. 4,461,924, Cl. 174-52.0FP.

C-I-L Inc.: *See*—
Binet, Rejean; Cribb, William E.; Edmonds, Anthony C. F.; and McNicol, Melvin A., 4,461,660, Cl. 149-2.000.

Cabot Corporation: *See*—
Gardner, Ross, Jr.; Falco, Robert N.; and Stallings, John P., 4,461,290, Cl. 128-152.000.

Calkin, Carston R.; and Trotti, Pasqualle, to Skedco, Inc. Removable walking attachment for ski boots. 4,461,104, Cl. 36-132.000.

Campbell, Lillian K.: *See*—
Hendry, Lawrence B.; Bransome, Edwin D., Jr.; Hutson, Marion S.; and Campbell, Lillian K., 4,461,619, Cl. 434-295.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Gandhi, Shri K.; and Madill, H. Dinsmore, 4,461,184, Cl. 73-863.230.

Canadian Patents & Development Limited: *See*—
Girard, Henri, 4,462,001, Cl. 330-149.000.
Thayer, William L.; Bennett, Adam J.; Kutowy, Oleh; and Sourirajan, Srinivasa, 4,461,707, Cl. 210-321.100.

Cannella, Vincent D.; Nath, Prem; and Shuman, Robert J., to Energy Conversion Devices, Inc. Reduced capacitance electrode assembly. 4,461,239, Cl. 118-718.000.

Cannon-Muskegon Corporation: *See*—
Harris, Kenneth, 4,461,659, Cl. 148-404.000.

Canon Kabushiki Kaisha: *See*—
Hatanaka, Katsunori; Hirai, Yutaka; Ayata, Naoki; and Uzawa, Shunichi, 4,461,956, Cl. 250-578.000.
Isobe, Takasi; and Kamata, Shigeru, 4,461,544, Cl. 350-429.000.
Murakami, Hiroyasu; Uchiyama, Takashi; Suzuki, Ryoichi; Kawamura, Masaharu; Sakai, Shinji; and Momiyama, Kikuo, 4,462,025, Cl. 340-753.000.
Nakagawa, Katsumi; Komatsu, Toshiyuki; Hirai, Yutaka; Misumi, Teruo; and Fukuda, Tadaji, 4,461,819, Cl. 430-59.000.
Shirai, Shigeru; Kanbe, Junichiro; and Fukuda, Tadaji, 4,461,820, Cl. 430-65.000.
Suzuki, Kiyoshi; and Sumino, Fumio, 4,461,753, Cl. 423-561.00B.
Yamada, Yu, 4,461,565, Cl. 355-8.000.

Capshew, Charles E.: *See*—
Welch, M. Bruce; Dietz, Richard E.; Capshew, Charles E.; and Martin, Joel L., 4,461,882, Cl. 526-119.000.

Cardio-Pace Medical, Inc.: *See*—
Moore, Gary L., 4,461,194, Cl. 81-436.000.

Carignani, Giancarlo; Cipriani, Aldo; and Mazzola, Massimo, to Snia Viscosa Societa' Nazionale Industria Aplicazioni Viscosa SpA. Process for obtaining cellular materials based on unsaturated polyester resins. 4,461,850, Cl. 521-91.000.

Carl Freudenberg, Firma: *See*—
Bischoff, Dieter; and Favorite, Armando, 4,461,794, Cl. 428-57.000.

Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co.: *See*—
Eichinger, Johann; Strehler, Richard; and Bartl, Max, 4,461,367, Cl. 180-252.000.

Carl-Zeiss-Stiftung: *See*—
Blaha, Erich, 4,461,551, Cl. 351-214.000.
Enderle, Eckhard, 4,461,517, Cl. 308-5.00R.

Carlen, Pamela J.: *See*—
Katan, Theodore; and Carlen, Pamela J., 4,461,677, Cl. 204-2.100.

Carlingswitch, Inc.: *See*—
Sorenson, Richard W., 4,461,938, Cl. 200-296.000.

Carlson, Lawrence E.: *See*—
Dewar, Michael E.; Ackerley, Kenneth E.; and Carlson, Lawrence E., 4,461,085, Cl. 33-174.00L.

Carmi, Mordechay; Nur, Benjamin; and Tesler, Tzipora, to Duram Rubber Products. Spindel moistener assembly and moistener members used in such assemblies for cotton pickers. 4,461,140, Cl. 56-50.000.

Carney, Edward J., to Acco Babcock Inc. Over and under accumulating power and free conveyor system. 4,461,216, Cl. 104-172.00B.

Caron, Lee. Non-corrosive security railing. 4,461,461, Cl. 256-19.000.

Carpaneto, Giovanni, to Officine Meccaniche Carbofuel S.p.A. Steam or hot water generator operating by solid fuels having high contents in volatile materials. 4,461,243, Cl. 122-15.000.

Carreker, Reginald V. Styling razor. 4,461,078, Cl. 30-47.000.

Carrillo, Ruben S. Fishing float. 4,461,115, Cl. 43-43.130.

Carson, Robert W. Arthroscopic surgical apparatus and method. 4,461,281, Cl. 128-3.000.

Casperson, John R., to Phillips Petroleum Company. Recovery of carbon black. 4,461,623, Cl. 23-314.000.

Cassella Aktiengesellschaft: *See*—
Mix, Konrad; and Feess, Erich, 4,461,622, Cl. 8-661.000.

Cassidy, Robert T.; and Doshi, Kishore J., to Union Carbide Corporation. Product recovery in pressure swing adsorption process and system. 4,461,630, Cl. 55-25.000.

Cauffman, Eugene W. Outdoor furnace. 4,461,274, Cl. 126-77.000.

Celler, George K.; Lischner, David J.; and Robinson, McDonald, to AT&T Bell Laboratories. Process for producing silicon devices. 4,461,670, Cl. 156-603.000.

Censor Patent- und Versuches-Anstalt: *See*—
Mayer, Herbert E., 4,461,567, Cl. 355-41.000.

Ceskoslovenska akademie ved.: *See*—
Hudecek, Slavko; Hnidek, Jaroslav; Heidingsfeld, Viktor; Kolarik, Jan; and Zelinger, Jiri, 4,461,847, Cl. 521-27.000.

Chamuel, Jacques R., to Charles Stark Draper Laboratory, Inc., The. Ultrasonic aircraft ice detector using flexural waves. 4,461,178, Cl. 73-599.000.

Chan, Steven S., to Ampex Corporation. Demodulator for an asynchronous binary signal. 4,462,051, Cl. 360-44.000.

Chang, Chin-Hsiung: *See—*
Neuzil, Richard W.; and Chang, Chin-Hsiung, 4,461,649, Cl. 127-46.100.
Chas. A. Blatchford & Sons Ltd.: *See—*
Shorter, John J.; and Brewer, Michael W., 4,461,045, Cl. 3-32.000.
Charles Stark Draper Laboratory, Inc., The: *See—*
Chamuel, Jacques R., 4,461,178, Cl. 73-599.000.
Chave, Donald M. Electrical/mechanical transducers. 4,461,933, Cl. 179-115.5VC.
Chedid, Louis: *See—*
Lefrancier, Pierre; Parant, Monique; Audibert, Francoise; Sache, Edgar; Chedid, Louis; Choay, Jean; and Lederer, Edgar, 4,461,761, Cl. 424-177.000.
Cheh, Ernest L., to Burndy Corporation. Method and apparatus for feeding lengths of electrical wire and the like. 4,461,416, Cl. 226-1.000.
Chemische Werke Huels A.G.: *See—*
Alfs, Helmut; Boexkes, Werner; and Vangermain, Erwin, 4,461,916, Cl. 568-788.000.
Chen, Di, to Magnetic Peripherals Inc. Moving diffraction grating for an information track centering system for optical recording. 4,462,095, Cl. 369-44.000.
Chen, Kevin C. S., to Kircaldie, Randall, and McNab. Respirating gas supply method and apparatus therefor. 4,461,293, Cl. 128-204.230.
Chess, Daniel L.; and White, William B., to United States of America, Navy. Infrared window materials and their fabrication. 4,461,750, Cl. 423-263.000.
Chevron Research Company: *See—*
Magee, Philip S., 4,461,764, Cl. 424-202.000.
Chicago Bridge & Iron Company: *See—*
Sattelberg, Stanley E.; and Baker, George A., 4,461,399, Cl. 220-444.000.
Chiecchi, Cesare, to U.S. Philips Corporation. Device for introducing anti-microphony sponge into an air-cored coil. 4,461,069, Cl. 29-564.800.
Chikamura, Takao: *See—*
Fujimoto, Makoto; Ohta, Yoshio; and Chikamura, Takao, 4,462,047, Cl. 358-212.000.
Chikashige, Kiyoshi: *See—*
Ouchi, Teruo; and Chikashige, Kiyoshi, 4,461,282, Cl. 128-4.000.
Childs, Jerry D.; Brothers, Lance E.; and Murphey, Joseph R., to Halliburton Company. Light weight composition and a method of sealing a subterranean formation. 4,461,644, Cl. 106-76.000.
Chin, Sing W., to National Semiconductor Corporation. High speed CMOS sense amplifier. 4,461,965, Cl. 307-530.000.
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T.: *See—*
Hermecz, Istvan; Meszaros, Zoltan; Breining, Tibor; Virag, Sandor; Vasvari nee Debreczy, Lelle; Horvath, Agnes; Nagy, Gabor; Mandi, Attila; Szucs, Tamas; Bitter, Istvan; and Sebestyen, Gyula, 4,461,769, Cl. 424-251.000.
Chisso Corporation: *See—*
Nishikawa, Masahiko; Ishibashi, Hiroaki; and Furukawa, Hidenori, 4,461,892, Cl. 536-65.000.
Chiu, David. Dual light source. 4,461,974, Cl. 315-65.000.
Choay, Jean: *See—*
Lefrancier, Pierre; Parant, Monique; Audibert, Francoise; Sache, Edgar; Chedid, Louis; Choay, Jean; and Lederer, Edgar, 4,461,761, Cl. 424-177.000.
Chow, Edward. Fuel treating device. 4,461,262, Cl. 123-536.000.
Chowdhury, Ajit K.; Bauer, Gerald L.; and Lehmann, Richard W., to Sterling Drug Inc. Oxygen injection nozzle for wet oxidation reactors. 4,461,743, Cl. 422-129.000.
Christensen, James M., to Sutter Biomedical, Inc. Bone and tissue healing device including a special electrode assembly and method. 4,461,300, Cl. 128-419.00F.
Christopher, Gilman O. Adjustable aerial spray nozzle apparatus. 4,461,426, Cl. 239-394.000.
Chung, David B.: *See—*
Lu, Sun; and Chung, David B., 4,461,715, Cl. 252-299.100.
Ciaffone, John T.; and Ortiz, Ernest A., to Warner-Lambert Company. Method and apparatus for changing the shaving attitude of a blade package. 4,461,079, Cl. 30-79.000.
Ciba-Geigy Corporation: *See—*
Abildt, Uwe; and Langauer, Theodor, 4,461,641, Cl. 71-93.000.
Batzer, Hans; and Sinnreich, Joel, 4,461,709, Cl. 210-643.000.
Ferrini, Pier G.; and Goschke, Richard, 4,461,770, Cl. 424-263.000.
Meier, Anton; and Troxler, Eduard, 4,461,898, Cl. 546-188.000.
Cibley, Leonard J. Automated biopsy device. 4,461,305, Cl. 128-754.000.
Cincinnati Tool, Division of Warren Tool Corporation: *See—*
Klee, George; De Noma, George R.; Collier, Stephen L.; and Newman, Rodney J., 4,461,603, Cl. 408-115.00R.
Cipriani, Aldo: *See—*
Carignani, Giancarlo; Cipriani, Aldo; and Mazzola, Massimo, 4,461,850, Cl. 521-91.000.
Clarion Co., Ltd.: *See—*
Watanabe, Tathuya, 4,462,112, Cl. 381-109.000.
Clement, Albrecht: *See—*
Becker, Wolfram; Clement, Albrecht; and Daumer, Rolf, 4,461,258, Cl. 123-440.000.
Clemente, Roger. Hydraulically operated fan assembly for a heat exchange assembly. 4,461,246, Cl. 123-41.120.
Cline, Harvey E., to General Electric Company. Method for making eutectic charge-coupled devices. 4,461,070, Cl. 29-571.000.
Clouser, Roger A. Locking gun racks. 4,461,385, Cl. 211-4.000.
Cobb, Alec S.; and Williams, David J., to Monsanto Europe S.A. Process for the production of sulfenamides. 4,461,897, Cl. 544-135.000.
Cod Inter Techniques SA: *See—*
Horvath, Laszlo S., 4,461,420, Cl. 229-43.000.
Codex Corporation: *See—*
Linde, Yosef, 4,462,074, Cl. 364-200.000.
Cohen, Robert K., to General Electric Company. System for interfacing an encoder to a microcomputer. 4,461,944, Cl. 219-110.000.
Cole, John: *See—*
Cole, John W., 4,461,473, Cl. 272-123.000.
Cole, John W., to Cole, John; and Shuk, Steve. Weightlifting apparatus. 4,461,473, Cl. 272-123.000.
Colgate-Palmolive Company: *See—*
Karami, Hamzeh; and Crutzen, Andre , 4,461,621, Cl. 604-368.000.
Prahs, Harald, 4,461,403, Cl. 222-129.000.
Collier, Stephen L.: *See—*
Klee, George; De Noma, George R.; Collier, Stephen L.; and Newman, Rodney J., 4,461,603, Cl. 408-115.00R.
Coloplast A/S: *See—*
Samuelsen, Peter, 4,461,668, Cl. 156-543.000.
Columbia University: *See—*
Lieberman, Seymour; Prasad, Veeramac V. K.; and Warne, Patricia A., 4,461,876, Cl. 525-374.000.
Columbus Auto Parts Company: *See—*
Patton, DeLane D., 4,461,063, Cl. 29-175.00R.
Combustion Engineering, Inc.: *See—*
Soland, John P.; and Bridges, Charles D., 4,461,450, Cl. 251-63.500.
Commissariat a l'Energie Atomique: *See—*
Allemand, Robert; Laval, Michel; and Parot, Pierre, 4,461,952, Cl. 250-370.000.
Allemand, Robert; Gagelin, Jean-Jacques; and Tournier, Edmond, 4,461,953, Cl. 250-374.000.
Fitoussi, Richard; Musikas, Claude; and Ranarivelo, Hubert, 4,461,747, Cl. 423-10.000.
Compagnie Generale des Etablissements Michelin: *See—*
Filliol, Jean-Claude; Ruby, Bernard; and Senechal, Jean, 4,461,333, Cl. 152-158.000.
Conard, Donald D.: *See—*
Nielsen, Chris E.; and Conard, Donald D., 4,462,023, Cl. 340-571.000.
Connecticut Valley Manufacturing, Inc.: *See—*
Eguizabal, Julian, 4,461,109, Cl. 42-51.000.
Connell, Edwin A., to Action Group, Inc. Collapsible sawhorse bracket. 4,461,370, Cl. 182-153.000.
Conoco Inc.: *See—*
Jones, Emrys H., Jr.; and Umphrey, Ronald W., 4,461,359, Cl. 175-61.000.
Consiglio Nazionale delle Richerche: *See—*
Rinelli, Giorgio; and Marabini, Anna M., 4,461,701, Cl. 209-166.000.
Conte, Louis B., Jr.: *See—*
Reichle, Walter T.; and Conte, Louis B., Jr., 4,461,893, Cl. 544-215.000.
Conti, Allen C. Method and apparatus to measure tension in a pull line for cable. 4,461,459, Cl. 254-134.3FT.
Conti, Vincent N., to American Safety Closure Corp. Threaded plastic bottle cap. 4,461,392, Cl. 215-270.000.
Continental Conveyor & Equipment Co., Inc.: *See—*
Bodovsky, Paul W., 4,461,633, Cl. 55-283.000.
Control Data Corporation: *See—*
Jallen, Gale A., 4,461,957, Cl. 290-44.000.
Cook, Sharon: *See—*
Suligoy, Diane; and Cook, Sharon, 4,461,192, Cl. 81-177.0ST.
Corbett, James O., to Electron Machine Corporation, The. Concentricity gage. 4,461,569, Cl. 356-72.000.
Cordaro, Robert S.: *See—*
Gwynette, Greswold; and Cordaro, Robert S., 4,461,515, Cl. 301-63.0PW.
Cordero, Carlos A.: *See—*
Kempf, Dennis D.; and Cordero, Carlos A., 4,461,400, Cl. 222-1.000.
Corley, Larry S.: *See—*
Bauer, Rosald S.; and Corley, Larry S., 4,461,879, Cl. 525-526.000.
Cormack, Alexander D., to S.W. Hooper & Co. Ltd. Supporting grip for bin or hopper. 4,461,606, Cl. 414-325.000.
Corning Glass Works: *See—*
McGarry, Charles N.; Stunis, Janet; and Wehrenberg, Thomas M., 4,461,843, Cl. 501-102.000.
Rittler, Hermann L., 4,461,839, Cl. 501-4.000.
Cosden Technology, Inc.: *See—*
Teyssie, Philippe; Jeome, Robert; Ouhadi, Trazollah; and Fayt, Roger, 4,461,874, Cl. 525-271.000.
Courser Incorporated: *See—*
King, Charles, 4,461,576, Cl. 356-375.000.
Courtin, Olivier. Manual massager. 4,461,285, Cl. 128-62.00R.
Cove, Harry R.; and Muchow, John D., to Hydril Company. Drilling choke. 4,461,316, Cl. 137-312.000.
Cox, Donald C.; and Saleh, Adel A. M., to AT&T Bell Laboratories. Dynamic class-4 FET amplifier. 4,462,004, Cl. 330-277.000.
Cox, J. Rodney. Hybrid digital-analog signal recording-playback system. 4,462,050, Cl. 360-32.000.
Crane, Burke J.: *See—*
Raymer, Jack D., II; Sampson, Stephen A.; and Crane, Burke J., 4,461,537, Cl. 350-96.200.

Crepeau, Allen E., to Uniroyal, Inc. Roof sheeting and flashing elastomeric composition. 4,461,875, Cl. 525-348.000.

Cribb, William E.: *See*—
Binet, Rejean; Cribb, William E.; Edmonds, Anthony C. F.; and McNicol, Melvin A., 4,461,660, Cl. 149-2.000.

Critikon, Inc.: *See*—
Hood, Rush W., Jr.; and Medero, Richard, 4,461,266, Cl. 128-681.000.

Crooks, Randall D. Coin operated vending stack. 4,461,377, Cl. 194-78.000.

Crump, John M. Equipment assembling, carrying and, or, securing device. 4,461,506, Cl. 294-147.000.

Crutcher Resources Corporation: *See*—
Goekler, Robert G.; and Hunt, Charles W., 4,461,429, Cl. 242-7.220.

Crutzen, Andre : *See*—
Karami, Hamzeh; and Crutzen, Andre , 4,461,621, Cl. 604-368.000.

Csaszar, Ernest J., to General Kap (P.R.) Corporation. Tamper-evident plastic closure. 4,461,390, Cl. 215-252.000.

Cunnane, Frank J., III: *See*—
Booth, Ian K.; and Cunnane, Frank J., III, 4,461,803, Cl. 428-234.000.

Cunningham, Douglas J.; and Gilkes, Harry W., to Britax-Excelsior Limited. Childs safety device for vehicles. 4,461,510, Cl. 297-250.000.

Curless, Richard W.; and Blanchard, Robert L., to Foxboro Company, The. Heater for air bath oven. 4,461,950, Cl. 219-368.000.

Curtis, R. Stephen. Mid-hind foot stabilizer. 4,461,288, Cl. 128-80.00H.

Curtis, Stanley F.: *See*—
Herd, William H., Jr.; and Curtis, Stanley F., 4,461,731, Cl. 261-18.00B.

Curtiss, William P.: *See*—
Fulton, Donald E.; Curtiss, William P.; and Fejes, William T., Jr., 4,461,987, Cl. 318-800.000.

Dai Nippon Insatsu Kabushiki Kaisha: *See*—
Tachibana, Eiichi; Murayama, Koushou; and Isumi, Kenzo, 4,461,663, Cl. 156-86.000.

Daimler-Benz Aktiengesellschaft: *See*—
Augustin, Ulrich, 4,461,169, Cl. 73-119.00A.
Grohn, Michael, 4,461,150, Cl. 60-605.000.

Dainippon Screen Seizo Kabushiki Kaisha: *See*—
Saitou, Naotada, 4,462,043, Cl. 358-75.000.

Daley, William D.; and Young, Robert D., to Allied Corporation. Process for producing hydrogen and sulfur from hydrogen sulfide. 4,461,755, Cl. 423-573.00G.

Dallimore, Keith J.: *See*—
Matthews, Robert B.; Taylor, Peter J.; and Dallimore, Keith J., 4,461,678, Cl. 204-9.000.

Dalrymple, Betty H., executor: *See*—
Thorn, Frank H., deceased, 4,461,749, Cl. 423-228.000.

Danfoss A/S: *See*—
Rudebeck, Viggo, 4,461,635, Cl. 62-202.000.

Data General Corporation: *See*—
Grondalski, David, 4,462,073, Cl. 364-200.000.

Dauman Displays, Inc.: *See*—
Dauman, Sidney M., 4,461,443, Cl. 248-220.300.

Dauman, Sidney M., to Dauman Displays, Inc. Selective positioning article support structure, particularly for pegboard-type hook. 4,461,443, Cl. 248-220.300.

Daumer, Rolf: *See*—
Becker, Wolfram; Clement, Albrecht; and Daumer, Rolf, 4,461,258, Cl. 123-440.000.

D'Avello, Robert F.; and Sokola, Raymond L., to Motorola, Inc. Radio frequency signal combining/sorting . apparatus. 4,462,098, Cl. 370-30.000.

Davidson, Mats I. Arrangement for frame and the like. 4,461,596, Cl. 403-231.000.

Davies, Robert B.: *See*—
Dotson, Robert N.; Davies, Robert B.; and Miller, Ira, 4,461,989, Cl. 323-222.000.

Davis, Alan L.; and Punako, Stephen, to Bendix/Allied Corporation. Socket contact for electrical connector and method of manufacture. 4,461,531, Cl. 339-258.00R.

Davis, Charlotte: *See*—
Davis, J. C., 4,461,423, Cl. 239-231.000.

Davis, Eugene E., to Johnsen & Jorgensen (Plastics) Limited Company. Tamper-resistant screw closure. 4,461,391, Cl. 215-252.000.

Davis, J. C., to Davis, J. C.; Davis, Charlotte; Anderson, Larry V.; and Anderson, Autrey. Sprinkler shield. 4,461,423, Cl. 239-231.000.

Davy McKee A.G.: *See*—
Koschinek, Gunter; Wandel, Dietmar; and Thone, Ludger, 4,461,740, Cl. 264-210.800.

de la Cruz, Rodolfo V., to Wisconsin Alumni Research Foundation. Method and apparatus for determining the in situ deformability of rock masses. 4,461,171, Cl. 73-151.000.

De Busscher, Cyriel R. J., to Sperry Corporation. Combine harvesters. 4,461,306, Cl. 130-27.00R.

Deere & Company: *See*—
Kramer, Kenneth D., 4,461,314, Cl. 137-106.000.

Deering, Roland F.; Dhondt, Roland O., deceased (by Dhondt, Ruth, executor); and Hines, John E., to Union Oil Company of California. Process for cooling, depressurizing, and moisturizing retorted oil shale. 4,461,673, Cl. 201-1.000.

De Freitas, Richard E.; and Blake, John J., to Deltalab Research, Inc. Digital encoding circuitry. 4,462,106, Cl. 375-30.000.

Dell'Acqua, Ernani; Bruzzese, Tiberio; and Ferrari, Lorenzo, to SPA Societa Prodotti Antibiotici S.p.A. Asti-inflammatory 1,2-benzothiazines. 4,461,768, Cl. 424-246.000.

Del Pesco, Thomas W.; and Goldbaum, Richard H., to Du Pont de Nemours, E. I., and Company. Process for refining tetrahydrofuran. 4,461,676, Cl. 203-29.000.

Delpretti, Roger, to Ateliers des Charmilles S.A. Apparatus for orienting the wire electrode support and guide member and the machining fluid nozzle of a travelling wire EDM apparatus. 4,461,942, Cl. 219-69.00W.

Delta Associates, Inc.: *See*—
Gatten, Ronald A.; and Patterson, Paul L., 4,461,166, Cl. 73-27.00R.

Deltalab Research, Inc.: *See*—
De Freitas, Richard E.; and Blake, John J., 4,462,106, Cl. 375-30.000.

DeLuca, Hector F.; Schnoes, Heinrich K.; and Hart, Leslie E., to Wisconsin Alumni Research Foundation. Method for inducing molting in laying hens. 4,461,766, Cl. 424-236.000.

DeLuca, Robert D.; and Jones, Robin M. F., to Johnson & Johnson Dental Products Company. Process for producing a dental restoration. 4,461,618, Cl. 433-200.000.

DeLucia, Mary L.: *See*—
Mathews, John H.; DeLucia, Mary L.; and Mattina, Charles F., 4,461,311, Cl. 131-365.000.

De Maria, Francesco: *See*—
Young, Chi C.; and De Maria, Francesco, 4,461,739, Cl. 264-176.00F.

Demuth, Martin; and Schaffner, Kurt, to Studiengesellschaft Kohle MBH. Processes for the preparation of pure enantiomers of bicyclo(2,2,2)oct-5-en-2-ones. 4,461,687, Cl. 204-158.00R.

Denki Kagaku Kogyo Kabushiki Kaisha: *See*—
Ito, Higashi; and Watanabe, Seiichi, 4,461,920, Cl. 570-236.000.
Maeda, Tetsuro; Yoshii, Yasuo; Okamoto, Akihiro; and Nishinakagawa, Isamu, 4,461,865, Cl. 524-440.000.

Dennison Manufacturing Company: *See*—
Russell, David B., 4,461,738, Cl. 264-145.000.

De Noma, George R.: *See*—
Klee, George; De Noma, George R.; Collier, Stephen L.; and Newman, Rodney J., 4,461,603, Cl. 408-115.00R.

Denzel, Theodor: *See*—
Breuer, Hermann; Treuner, Uwe D.; and Denzel, Theodor, 4,461,767, Cl. 424-246.000.

Deschamps, Daniel: *See*—
Brunner, Jean-Michel; and Deschamps, Daniel, 4,461,222, Cl. 109-29.000.

Design Professionals Financial Corporation: *See*—
Okubo, Shigeo, 4,461,463, Cl. 269-60.000.

DeSoto, Inc.: *See*—
Sekmakas, Kazys; and Shah, Raj, 4,461,857, Cl. 523-414.000.

Dessau, Ralph M.; and Kerr, George T., to Mobil Oil Corporation. Reactivation of steam-deactivated catalysts. 4,461,845, Cl. 502-27.000.

Deutsche Forschungs- und Versuchanstalt fur Luft- und Raumfahrt e.V.: *See*—
Lindner, Friedrich; and Scheunemann, Kurt, 4,461,153, Cl. 62-3.000.

DeVincentis, Cheryl A. Shoe with interchangeable shoe straps having spring connectors. 4,461,102, Cl. 36-101.000.

Dewar, Michael E.; Ackerley, Kenneth E.; and Carlson, Lawrence E., to National Research Development Corporation. Goniometer. 4,461,085, Cl. 33-174.00L.

Dhondt, Roland O., deceased: *See*—
Deering, Roland F.; Dhondt, Roland O., deceased; and Hines, John E., 4,461,673, Cl. 201-1.000.

Dhondt, Ruth, executor: *See*—
Deering, Roland F.; Dhondt, Roland O., deceased; and Hines, John E., 4,461,673, Cl. 201-1.000.

Diamond Shamrock Chemicals Company: *See*—
Pyne, William J.; Ku, Han S.; and Holm, Robert E., 4,461,899, Cl. 546-203.000.

Diaz, Zaida, to Shell Oil Company. Method of removing hydrogen sulfide from gases utilizing a stabilized chelate solution. 4,461,754, Cl. 423-573.00R.

Didier, Philippe; and Vermonet, Francis. Sole incorporable into plaster cast bandages for the foot. 4,461,289, Cl. 128-83.500.

Didier-Werke A.G.: *See*—
Sizmann, Rudolf, 4,461,339, Cl. 165-1.000.

Diegelman, David. Gaitor with improved moisture penetration protection. 4,461,098, Cl. 36-2.00R.

Diehl, Walter. Article of jewellery. 4,461,158, Cl. 63-2.000.

Diepers, Heinrich, to Siemens Aktiengesellschaft. Method and apparatus for coating a graphite member. 4,461,689, Cl. 204-192.00N.

Dietrick, Robert F.: *See*—
Gay, Walter A.; and Dietrick, Robert F., 4,461,918, Cl. 568-938.000.

Dietz, Richard E.: *See*—
Welch, M. Bruce; Dietz, Richard E.; Capshew, Charles E.; and Martin, Joel L., 4,461,882, Cl. 526-119.000.

Diggs, Thomas M. Bicycle power pack. 4,461,365, Cl. 180-11.000.

Digonnet, Michel J. F.: *See*—
Shaw, Herbert J.; and Digonnet, Michel J. F., 4,461,536, Cl. 350-96.150.

Dillard, Ewell F.: *See*—
Lewis, Harry T.; and Dillard, Ewell F., 4,461,913, Cl. 564-063.000.

Ditchburn, Robert W.: *See*—
Welbourn, Christopher M.; Ditchburn, Robert W.; and Stewart, Andrew D. G., 4,461,568, Cl. 356-30.000.

Dlabal, Pavel: *See*—
Janda, Jiri; Burdych, Jiri; Lab, Miroslav; and Dlabal, Pavel, 4,462,097, Cl. 369-248.000.

Dmitriev, Stanislav P.; Evseev, Anatoly K.; Ivanov, Andrei S.; Komorin, Leonid V.; Nikishkin, Vladimir I.; Nuzhny, Stanislav N.; Rex, Mikhail K.; Sviniin, Mikhail P.; and Fedotov, Mikhail T. Charged particle accelerator vacuum chamber. 4,461,972, Cl. 313-420.000.

Dr. Johannes Heidenhain GmbH: *See*—
Ernst, Alfons, 4,461,083, Cl. 33-125.00C.
Schwefel, Ernst, 4,462,083, Cl. 364-577.000.

Dodd, Alec G., to Rolls-Royce Limited. Aerofoil for a gas turbine engine. 4,461,612, Cl. 416-96.00A.

Doerr, Joseph E.; and Bozack, Tomas J., to United States of America, Navy. Dynamic head motion measuring system. 4,461,553, Cl. 352-39.000.

Doi, Yuzuru, to Kabushiki Kaisha Medos Kenkyusho. Endoscopic laser coagulator. 4,461,283, Cl. 128-7.000.

Dolomite S.p.A.: *See*—
Annovi, Giuseppe, 4,461,103, Cl. 36-121.000.

Dommer, Hans-Martin: *See*—
Schneider, Franz; Bergmann, Ewald; Kurz, Otto; and Dommer, Hans-Martin, 4,461,068, Cl. 29-568.000.

Don Fell Limited: *See*—
Fell, Donald R.; and Takeuchi, Seiji, 4,461,402, Cl. 222-105.000.

Dong, Charles W.; and Barrat, Michel, to Sperry Corporation. Disc drive electromagnetic actuator with enhanced flux density. 4,462,054, Cl. 360-106.000.

Dontscheff, Helmut, to Boeing Company, The. Pivotal mount for laminating head. 4,461,669, Cl. 156-574.000.

Doshi, Kishore J.: *See*—
Cassidy, Robert T.; and Doshi, Kishore J., 4,461,630, Cl. 55-25.000.

Dotson, Robert N.; Davies, Robert B.; and Miller, Ira, to Motorola, Inc. Voltage sense circuit for a bubble memory voltage booster. 4,461,989, Cl. 323-222.000.

Doty, Gerald A., to Gateway Industries, Inc. Tension relieving mechanism for a seat belt retractor and control means therefor. 4,461,493, Cl. 280-807.000.

Douglas, Lawrence M., to Polaroid Corporation. Film processing apparatus for self-processing film unit with a folded applicator. 4,461,556, Cl. 354-303.000.

Dow Chemical Company, The: *See*—
Ahlstrom, Ross C., Jr., 4,461,745, Cl. 422-197.000.
Burba, John L., III, 4,461,714, Cl. 252-184.000.
Flores, David P.; and Allen, James A., 4,461,864, Cl. 524-322.000.
Willis, Stephen B.; and Boyce, Pamela J., 4,461,856, Cl. 523-401.000.

Downey, Charles R. Information storage device and method. 4,461,497, Cl. 283-65.000.

Doyle, Henry W.: *See*—
Breed, Richard A., III; Doyle, Henry W.; and Roberts, Harold A., 4,461,538, Cl. 350-96.200.

Doyle, Terrence W.: *See*—
Matson, James A.; Myllymaki, Robert W.; Doyle, Terrence W.; and Bush, James A., 4,461,831, Cl. 435-119.000.

Drechsel, Ludwig: *See*—
Angele, Eugen; and Drechsel, Ludwig, 4,461,229, Cl. 112-291.000.

Drent, Eit, to Shell Oil Company. Process for the co-production of dicarboxylates and acids. 4,461,910, Cl. 560-263.000.

Drespa, Gerd: *See*—
Norkus, Hans; and Drespa, Gerd, 4,461,600, Cl. 405-260.000.

Dresser Industries, Inc.: *See*—
Fuchs, Benjamin H., 4,461,361, Cl. 175-269.000.
Pratt, William J.; and King, Robert E., 4,461,373, Cl. 192-4.00A.

Drlik, Gunther, to OBE-Werk Ohnmacht & Baumgartner GmbH & Co. K.G. Spectacle frame. 4,461,548, Cl. 351-153.000.

Drummond Scientific Company: *See*—
Kenney, James W., 4,461,328, Cl. 141-67.000.

Du Pont Canada Inc.: *See*—
Mollison, Alistair N., 4,461,808, Cl. 428-475.800.

DuBell, Thomas L., to United States of America, Navy. Mixed flow swirl augmentor for turbofan engine. 4,461,146, Cl. 60-261.000.

Dubovy, Joseph L.: *See*—
Grashow, Joseph; Berg, Melvin J.; Dubovy, Joseph L.; and Grashow, Stanley J., 4,462,033, Cl. 343-715.000.

Duckett, Melvyn; Ashton, Gregory J.; and Salisbury, David R., to Petrocarbon Developments Limited. Separation of gas mixtures by partial condensation. 4,461,634, Cl. 62-11.000.

Dufau, Ghislain: *See*—
Barbarin, Michel; and Dufau, Ghislain, 4,461,716, Cl. 252-307.000.

Dulaney, Jimmie O.: *See*—
Hudson, Doyle R.; and Dulaney, Jimmie O., 4,461,136, Cl. 53-399.000.

Dumbser, Gerhard, to Fichtel & Sachs AG. Lock system for motor vehicles. 4,461,501, Cl. 292-201.000.

Dunegan Corporation: *See*—
Feng, Ching C., 4,461,177, Cl. 73-587.000.

Dunn, James M., to Verex Laboratories, Inc. Constant release rate solid oral dosage formulations of veropamil. 4,461,759, Cl. 424-19.000.

Duo-Fast Corporation: *See*—
Grikis, Raimonds, 4,461,380, Cl. 198-389.000.

Du Pont de Nemours, E. I., and Company: *See*—
Abele, Werner, 4,461,822, Cl. 430-97.000.
Adelman, Robert L., 4,461,858, Cl. 524-49.000.
Del Pesco, Thomas W.; and Goldbaum, Richard H., 4,461,676, Cl. 203-29.000.
Gregory, Walter A., 4,461,773, Cl. 424-272.000.
Held, Robert P., 4,461,823, Cl. 430-120.000.
Jacobson, Howard W., 4,461,810, Cl. 428-530.000.
Levitt, George; and Zimmerman, William T., 4,461,640, Cl. 71-92.000.
Luoma, Robert P., II; and Roxlo, Helen E., 4,461,951, Cl. 219-497.000.
Oswald, Joseph A., Jr., 4,461,785, Cl. 427-45.100.
Su, Aaron C. L., 4,461,872, Cl. 525-240.000.

Duram Rubber Products: *See*—
Carmi, Mordechay; Nur, Benjamin; and Tesler, Tzipora, 4,461,140, Cl. 56-50.000.

Durand, Guy; and Barriuso, Jean-Pierre, to Legrand. Electrical connector for insulated conductors. 4,461,528, Cl. 339-98.000.

Duro-Test Corporation: *See*—
Kaufman, Rudolph; and Thouret, Wolfgang E., 4,461,973, Cl. 315-56.000.
Walsh, Peter, 4,461,969, Cl. 313-113.000.

Duthie, Joseph G. M., to United States of America, Army. Stereoscopic video image display. 4,461,541, Cl. 350-132.000.

Dutt, Herbert V., to Sun Coast Plastics, Inc. Closure cap. 4,461,393, Cl. 215-329.000.

Dynamics Corporation of America: *See*—
Lewison, Howard L., 4,461,358, Cl. 172-705.000.

E. R. Squibb & Sons, Inc.: *See*—
Breuer, Hermann; Treuner, Uwe D.; and Denzel, Theodor, 4,461,767, Cl. 424-246.000.

Eagle Industry Co., Ltd.: *See*—
Matsumoto, Sotosuke, 4,461,487, Cl. 277-74.000.

Eastman Kodak Company: *See*—
Baughman, Richard C.; and Bump, David S., 4,461,404, Cl. 222-148.000.
Lees, Roger T., 4,461,983, Cl. 315-383.000.
Leonard, Eric M.; Geyer, Frederick F.; and Myers, George M., 4,462,036, Cl. 346-137.000.

Eaton Corporation: *See*—
Bekkala, Andrew H.; and Garrett, Wayne H., 4,461,372, Cl. 188-73.340.

Eberhard, Norbert: *See*—
Heep, Dieter; and Eberhard, Norbert, 4,461,451, Cl. 251-63.500.

Ebonite International, Inc.: *See*—
Lee, Andrew J.; Palmer, Thomas E.; and Mason, Dorris K., 4,461,478, Cl. 273-63.00R.

Econolite Control Products, Inc.: *See*—
Johnson, Wilbur E., 4,462,031, Cl. 340-916.000.

Eddelbuttel & Schneider: *See*—
Schneider, Kurt, 4,461,324, Cl. 138-174.000.

Edelbrock Corp.: *See*—
McFarland, James D., Jr., 4,461,248, Cl. 123-52.00M.

Edmonds, Anthony C. F.: *See*—
Binet, Rejean; Cribb, William E.; Edmonds, Anthony C. F.; and McNicol, Melvin A., 4,461,660, Cl. 149-2.000.

Edward Orton Jr., Ceramic Foundation, The: *See*—
Vukovich, Milan, Jr., 4,461,616, Cl. 432-18.000.

Edwards, Hugh T., Jr.: *See*—
O'Cheskey, Theodore H.; and Edwards, Hugh T., Jr., 4,461,945, Cl. 219-121.0LC.

Eguchi, Kiyohisa: *See*—
Ikeda, Shigeru; Hori, Shozi; Eguchi, Kiyohisa; Matsuo, Kanji; Zaima, Hidenori; Gamada, Yoshifumi; and Kondo, Teruhisa, 4,461,806, Cl. 428-408.000.

Eguizabal, Julian, to Connecticut Valley Manufacturing, Inc. Firearm with novel breech plug and bolster assembly. 4,461,109, Cl. 42-51.000.

Eheim, Franz; and Hofer, Gerald, to Robert Bosch GmbH. RPM Governor for a fuel injection pump. 4,461,255, Cl. 123-357.000.

Eichinger, Johann; Strehler, Richard; and Bartl, Max, to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co. Drive train for a steerable drive wheel of a vehicle. 4,461,367, Cl. 180-252.000.

Eigenmann, Ludwig. Self extinguishing polymeric compositions, which upon contacting a flame provide a nondropping char-forming incandescent crust, and which do not produce flame neither toxic fumes. 4,461,862, Cl. 524-101.000.

Eilers, Jacobus; and Stork, Willem H. J., to Shell Oil Company. Process for reducing Ramsbottom Carbon Test of short residues. 4,461,699, Cl. 208-89.000.

Einarsson, Baldvin: *See*—
Oehlenschlager, Adam A.; and Einarsson, Baldvin, 4,461,054, Cl. 15-304.000.

Eklund, Louis E., to Fleet Engineers, Inc. Trailer sand shoes. 4,461,491, Cl. 280-763.100.

Electron Machine Corporation, The: *See*—
Corbett, James O., 4,461,569, Cl. 356-72.000.

Eli Lilly and Company: *See*—
Hershberger, Charles L.; Merkel, Kurt E.; Weeks, Robert E.; and Wild, Gene M., 4,461,723, Cl. 260-112.50R.

Elliott, David W., to Elliott Stone Company, Inc. Stonecutter sprocket having replaceable carbide steel teeth. 4,461,269, Cl. 125-21.000.

Elliott Stone Company, Inc.: *See*—
Elliott, David W., 4,461,269, Cl. 125-21.000.

Elscint Incorporated: *See*—
Blumenthal, Rafael, 4,462,111, Cl. 378-014.000.

Elsmo, Thad F.: *See*—
Horvath, Ronald F.; Reid, John R.; and Elsmo, Thad F., 4,461,485, Cl. 273-425.000.

Emerson, Clarence A. Marker apparatus with sharpener. 4,461,589, Cl. 401-50.000.

Emerson Electric Co.: *See—*
Bowsky, Benjamin; and Honkamp, Glenn A., 4,461,925, Cl. 174-152.0GM.

Emhart Industries, Inc.: *See—*
Jones, Stanley P.; Gennard, Derek; and Fenton, Frank A., 4,461,637, Cl. 65-158.000.
Smock, Steven W., 4,461,064, Cl. 29-434.000.

EMI Limited: *See—*
Holt, Lyn, 4,461,179, Cl. 73-658.000.

Emonet, Henri, to Maco Meudon. Anti-freezing device for pneumatic tools. 4,461,204, Cl. 91-55.000.

Enderle, Eckhard, to Carl-Zeiss-Stiftung. Throttle for gas bearings. 4,461,517, Cl. 308-5.00R.

Energy Conversion Devices, Inc.: *See—*
Cannella, Vincent D.; Nath, Prem; and Shuman, Robert J., 4,461,239, Cl. 118-718.000.

Engert, Gerd-Juergen: *See—*
Magin, Rudolf; Nenninger, Franz; and Engert, Gerd-Juergen, 4,461,327, Cl. 141-1.000.

English, George J., to GTE Products Corporation. Photoflash unit having optical system including aspheric lens to enhance light output. 4,462,063, Cl. 362-11.000.

ens Bio Logicals Inc.: *See—*
Ogilvie, Kelvin K., 4,461,757, Cl. 424-085.000.

Enso-Gutzeit Oy: *See—*
Hakulinen, Risto; Salkinoja-Salonen, Miria; Rasanen, Jorma; and Kyytsonen, Juhani, 4,461,708, Cl. 210-605.000.

Epson Corporation: *See—*
Koto, Haruhiko, 4,462,035, Cl. 346-76.0PH.

Erard, Raoul-Henri, to Sintel S.A. Watch, the back cover of which constitutes a plate. 4,461,580, Cl. 368-77.000.

Erickson, William R.; and Whitney, Solon G., to American Petro Mart, Inc. Adjustably metered transfer of resin increments in folded bed ion exchange systems. 4,461,710, Cl. 210-675.000.

Erlam, David P., to Rittal-Werk Rudolf Loh GmbH & Co. Kg. Card frames. 4,461,384, Cl. 206-577.000.

Erni, Peter; Kogelschatz, Ulrich; Strassler, Sigfrid; and Wiesmann, Hans-Jurg, to BBC Brown, Boveri & Company, Limited. Apparatus for generating ozone by an electric discharge. 4,461,744, Cl. 422-186.180.

Ernst, Alfons, to Dr. Johannes Heidenhain GmbH. Length or angle measuring instrument. 4,461,083, Cl. 33-125.00C.

Erwin, Charles W., to Henthorn, G. Gene, a part interest. Automatic fishhook setting apparatus. 4,461,113, Cl. 43-15.000.

Erwin Kampf GmbH & Co. Maschinenfabrik: *See—*
Hutzenlaub, Armin S. P., 4,461,432, Cl. 242-75.510.

Esaka, Shinichi: *See—*
Toge, Hiroaki; Esaka, Shinichi; Murakami, Yutaka; and Murao, Toshiaki, 4,461,348, Cl. 165-173.000.

Essilor International Cie Generale d'Optique: *See—*
Legendre, Serge, 4,461,550, Cl. 351-169.000.

Ethicon, Inc.: *See—*
Shalaby, Shalaby W.; Stephenson, Martin; Schaap, Louise; and Hartley, Graham H., deceased, 4,461,298, Cl. 128-335.500.

Everett/Charles, Inc.: *See—*
Glau, Gordon L., 4,461,993, Cl. 324-158.00P.

Evergreen Specialty Company: *See—*
Rhodes, Robert E., 4,462,065, Cl. 362-250.000.

Evseev, Anatoly K.: *See—*
Dmitriev, Stanislav P.; Evseev, Anatoly K.; Ivanov, Andrei S.; Komorin, Leonid V.; Nikishkin, Vladimir I.; Nuzhny, Stanislav N.; Rex, Mikhail K.; Sviniin, Mikhail P.; and Fedotov, Mikhail T., 4,461,972, Cl. 313-420.000.

Ewaldt, Helmut; Raabe, Gerhard; Sauermann, Heinz; and Burmeister, Rainer, to U.S. Philips Corporation. Photosensitive semiconductor resistor. 4,462,019, Cl. 338-15.000.

Ex-Cell-O Corporation: *See—*
Appelblatt, Irving; and Krawiecki, Peter, 4,461,202, Cl. 89-40.00B.

Exxon Research and Engineering Co.: *See—*
Bock, Jan; McCall, Patrick P.; Robbins, Max L.; and Siskin, Michael, 4,461,696, Cl. 208-11.0LE.
Briens, Cedric L.; and Sankey, Bruce M., 4,461,698, Cl. 208-33.000.
Hartman, G. William, Jr.; and Schley, Ronald F., 4,461,465, Cl. 271-22.000.
Peiffer, Dennis G.; Lundberg, Robert D.; and Turner, S. Richard, 4,461,884, Cl. 526-240.000.
West, Theodore H., 4,461,697, Cl. 208-31.000.

Eye Research Institute of Retina Foundation: *See—*
Refojo, Miguel F.; and Rolando, Maurizio, 4,461,303, Cl. 128-630.000.

F. Mannhart AG: *See—*
Mannhart, Felix, 4,461,060, Cl. 28-295.000.

Fabel, Warren M. Non-tenting business form assemblies anJ method and apparatus for making the same. 4,461,661, Cl. 156-70.000.

Fackler, Martin L. Surgical retaining device. 4,461,284, Cl. 128-20.000.

Fahnrich, Hans-Jurgen, to Patent-Treuhand Gesellschaft fur elektrische Gluhlampen mbH. High-pressure metal vapor discharge lamp igniter circuit system. 4,461,982, Cl. 315-290.000.

Falco, Robert N.: *See—*
Gardner, Ross, Jr.; Falco, Robert N.; and Stallings, John P., 4,461,290, Cl. 128-152.000.

Falk, David O., to Marathon Oil Company. Process for partially or completely plugging permeable zones in a subterranean formation. 4,461,351, Cl. 166-295.000.

Falk, David O., to Marathon Oil Company. Process for selectively plugging a subterranean formation with a polymer gel. 4,461,352, Cl. 166-295.000.

Faltus, Arthur V. Nozzle and guard unit. 4,461,424, Cl. 239-288.500.

Fanuc Ltd.: *See—*
Kurakake, Mitsuo, 4,462,086, Cl. 364-900.000.

Fariss, James D., to W. L. Gore & Associates, Inc. Strain relief boot. 4,461,529, Cl. 339-102.00R.

Faulkner, Bobby P.; and Weinecke, Michael H., to Allis-Chalmers Corporation. Apparatus for recovery of different weight fractions of oil from shale. 4,461,674, Cl. 202-85.000.

Favata, Kenneth C., to Xerox Corporation. Copy sheet contamination prevention. 4,461,563, Cl. 355-3.0TR.

Favorite, Armando: *See—*
Bischoff, Dieter; and Favorite, Armando, 4,461,794, Cl. 428-57.000.

Fayt, Roger: *See—*
Teyssie, Philippe; Jeome, Robert; Ouhadi, Trazollah; and Fayt, Roger, 4,461,874, Cl. 525-271.000.

Fedotov, Mikhail T.: *See—*
Dmitriev, Stanislav P.; Evseev, Anatoly K.; Ivanov, Andrei S.; Komorin, Leonid V.; Nikishkin, Vladimir I.; Nuzhny, Stanislav N.; Rex, Mikhail K.; Sviniin, Mikhail P.; and Fedotov, Mikhail T., 4,461,972, Cl. 313-420.000.

Feess, Erich: *See—*
Mix, Konrad; and Feess, Erich, 4,461,622, Cl. 8-661.000.

Fejes, William T., Jr.: *See—*
Fulton, Donald E.; Curtiss, William P.; and Fejes, William T., Jr., 4,461,987, Cl. 318-800.000.

Feldmann, Joachim; and Oberlander, Andreas, to WABCO Fahrzeugbremsen GmbH. Brake actuator device with automatic slack adjuster. 4,461,371, Cl. 188-71.900.

Fell, Donald R.; and Takeuchi, Seiji, to Don Fell Limited; and Lawrence Fell Limited. Container liner. 4,461,402, Cl. 222-105.000.

Feng, Ching C., to Dunegan Corporation. Acoustic emission transducer package. 4,461,177, Cl. 73-587.000.

Fenton, Frank A.: *See—*
Jones, Stanley P.; Gennard, Derek; and Fenton, Frank A., 4,461,637, Cl. 65-158.000.

Fenton, William: *See—*
Layton, Howard M.; and Fenton, William, 4,461,347, Cl. 165-133.000.

Ferrari, Lorenzo: *See—*
Dell'Acqua, Ernani; Bruzzese, Tiberio; and Ferrari, Lorenzo, 4,461,768, Cl. 424-246.000.

Ferrini, Pier G.; and Goschke, Richard, to Ciba-Geigy Corporation. Mercaptoimidazole derivatives. 4,461,770, Cl. 424-263.000.

Fertig, Jilma. Flower arranging vase. 4,461,118, Cl. 47-41.00R.

Fiat Allis Europe S.p.A.: *See—*
Barbagli, Rino O., 4,461,320, Cl. 137-625.600.

Fichet-Bauche: *See—*
Brunner, Jean-Michel; and Deschamps, Daniel, 4,461,222, Cl. 109-29.000.

Fichtel & Sachs AG: *See—*
Dumbser, Gerhard, 4,461,501, Cl. 292-201.000.

Field, Stephen P., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Electrothermal gas thrust units. 4,461,144, Cl. 60-203.100.

Filliol, Jean-Claude; Ruby, Bernard; and Senechal, Jean, to Compagnie Generale des Etablissements Michelin. Internal support to resist the flattening of a tire. 4,461,333, Cl. 152-158.000.

Finnegan, Danny. Automatic pressure release mechanism for caulk gun. 4,461,407, Cl. 222-391.000.

Fischer & Porter Company: *See—*
Schmoock, Roy F., 4,462,060, Cl. 361-154.000.

Fisher, Alan R., to Ford Motor Company. Dual clutch multiple countershaft transmission. 4,461,188, Cl. 74-330.000.

Fitoussi, Richard; Musikas, Claude; and Ranarivelo, Hubert, to Commissariat a l'Energie Atomique. Method for separating actinides from lanthanides in an acidic aqueous solution. 4,461,747, Cl. 423-10.000.

Flechs, Ronald D. Machine for installing drip irrigation conduit. 4,461,598, Cl. 405-181.000.

Fleet Engineers, Inc.: *See—*
Eklund, Louis E., 4,461,491, Cl. 280-763.100.

Flores, David P.; and Allen, James A., to Dow Chemical Company, The. Method for reducing block of ethylene interpolymers containing —COOH groups. 4,461,864, Cl. 524-322.000.

Flores, Margarita C.: *See—*
Staggs, Arnol; and Flores, Margarita C., 4,461,362, Cl. 175-325.000.

FMC Corporation: *See—*
Kempf, Dennis D.; and Cordero, Carlos A., 4,461,400, Cl. 222-1.000.
Menacci, Samuel A., 4,461,780, Cl. 426-521.000.

Foldbjerg, Erik. Hand pressing device for making fuel briquettes from soaked paper. 4,461,626, Cl. 44-11.000.

Foley, Kevin M., to General Motors Corporation. Engine air induction system. 4,461,732, Cl. 261-52.000.

Foody, Patrick. Method for increasing the accessibility of cellulose in lignocellulosic materials, particularly hardwoods agricultural residues and the like. 4,461,648, Cl. 127-37.000.

Ford Motor Company: *See—*
Fisher, Alan R., 4,461,188, Cl. 74-330.000.

Forsman, William C.: *See—*
Vogel, F. Lincoln; and Forsman, William C., 4,461,719, Cl. 252-503.000.

Foster Wheeler Limited: *See—*
Hall, Richard I., 4,461,651, Cl. 134-1.000.
Fowks, William R., to Rockwell International Corporation. Method for stabilizing the resonance frequency of a rubidium frequency standard. 4,462,006, Cl. 331-3.000.
Fox, Daniel W.; Peters, Edward N.; and Smith, Gary F., to General Electric Company. Polycarbonate/poly(ethylene terephthalate) resin solutions. 4,461,877, Cl. 525-439.000.
Foxboro Company, The: *See—*
Curless, Richard W.; and Blanchard, Robert L., 4,461,950, Cl. 219-368.000.
Franchini, Mauro; and Veraldi, Arnaldo, to Weber S.p.A. Carburetor fitted with a device for feeding the engine with lean mixture during accelerator release. 4,461,252, Cl. 123-325.000.
Frank, Arthur J., to United States of America, Energy. Organic conductive films for semiconductor electrodes. 4,461,691, Cl. 204-242.000.
Frank, Dieter: *See—*
Roth, Gunter; Quittkat, Wolfram; Frank, Dieter; Muller, Ludwig; and Grassmann, Wilhelm, 4,461,645, Cl. 106-100.000.
Franken, Adrianus J. J., to U.S. Philips Corporation. Optical communication element and optical communication cable comprising such an element. 4,461,540, Cl. 350-96.230.
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
Theurer, Josef; and Riessberger, Klaus, 4,461,604, Cl. 409-296.000.
Frear, David L.: *See—*
Gallusser, David O.; MacAvoy, David W.; Punako, Stephen; and Frear, David L., 4,461,526, Cl. 339-89.00M.
Friedman, George: *See—*
Albano, John V.; and Friedman, George, 4,461,751, Cl. 423-372.000.
Fritel, Raymond; and McPeak, Garold L., to RO Corporation. Structural support for outrigger. 4,461,490, Cl. 280-763.100.
Fritschi, Edgar; and Hartenstein, Johannes, to Warner-Lambert Company. Dibenzo(de,g)quinolines. 4,461,895, Cl. 546-75.000.
Froment, Jean-Paul: *See—*
Palau, Joseph; and Froment, Jean-Paul, 4,461,325, Cl. 139-68.000.
Fuchs, Benjamin H., to Dresser Industries, Inc. Underreamer with cylindrical boss and socket hinge assembly for the cutter arm. 4,461,361, Cl. 175-269.000.
Fuji Jukogyo Kabushiki Kaisha: *See—*
Umezawa, Mitsuo, 4,461,374, Cl. 192-21.500.
Fuji Photo Film Co., Ltd.: *See—*
Sano, Kenji; Kondo, Syunichi; and Sato, Hideo, 4,461,821, Cl. 430-83.000.
Fuji Photo Optical Co., Ltd.: *See—*
Harada, Yuho; and Kuwayama, Shigeo, 4,461,841, Cl. 501-37.000.
Fujii, Kozo: *See—*
Tahara, Susumu; Fujii, Kozo; Nishihira, Keigo; Matsuda, Masaoki; and Mizutare, Katsuhiko, 4,461,909, Cl. 560-193.000.
Fujii, Toru: *See—*
Ikari, Kazuo; and Fujii, Toru, 4,461,547, Cl. 350-580.000.
Fujimoto, Makoto; Ohta, Yoshio; and Chikamura, Takao, to Matsushita Electric Industrial Co., Ltd. Solid state imager with blooming suppression. 4,462,047, Cl. 358-212.000.
Fujinaga, Minoru: *See—*
Higuchi, Seizun; Kamada, Minoru; Tano, Kazuhiro; Fushino, Tetsuo; and Fujinaga, Minoru, 4,461,679, Cl. 204-27.000.
Fujio, Ryota: *See—*
Fukahori, Yoshihide; Morimura, Yasuhiro; Fujio, Ryota; and Fukuura, Yukio, 4,461,796, Cl. 428-116.000.
Fujita, Takeshi: *See—*
Kawamatsu, Yutaka; and Fujita, Takeshi, 4,461,902, Cl. 548-183.000.
Fujitsu Limited: *See—*
Miida, Takashi; Hika, Yoshihiko; and Takei, Akira, 4,462,089, Cl. 365-185.000.
Satoh, Yoshio; Ohashi, Makoto; Miyashita, Tsutomu; Matsuda, Kazuo; and Komenou, Kazunari, 4,462,087, Cl. 365-36.000.
Wada, Kunihiko; and Nakano, Motoo, 4,461,072, Cl. 29-571.000.
Fukahori, Yoshihide; Morimura, Yasuhiro; Fujio, Ryota; and Fukuura, Yukio, to Bridgestone Tire Company Limited. Sound damping materials. 4,461,796, Cl. 428-116.000.
Fukuda, Norisuke; and Miyazawa, Susumu, to Tokyo Shibaura Denki Kabushiki Kaisha. Microwave oven with infrared temperature detector. 4,461,941, Cl. 219-10.55B.
Fukuda, Tadaji: *See—*
Nakagawa, Katsumi; Komatsu, Toshiyuki; Hirai, Yutaka; Misumi, Teruo; and Fukuda, Tadaji, 4,461,819, Cl. 430-59.000.
Shirai, Shigeru; Kanbe, Junichiro; and Fukuda, Tadaji, 4,461,820, Cl. 430-65.000.
Fukuura, Yukio: *See—*
Fukahori, Yoshihide; Morimura, Yasuhiro; Fujio, Ryota; and Fukuura, Yukio, 4,461,796, Cl. 428-116.000.
Fukuzono, Hideki: *See—*
Kobayashi, Masato; Fukuzono, Hideki; and Nishimura, Hiromi, 4,462,057, Cl. 361-2.000.
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Gantz, James L.; and Martin, Marcus C., to Allied Corporation. Automatic beam cleaning machine. 4,461,050, Cl. 15-3.000.
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Gimpel, Juergen; Schwendemann, Volker; Schenck, Hans-Uwe; and Gulbins, Erich, to BASF Aktiengesellschaft. Surface-coating binders which contain blocked isocyanate groups and are suitable for cathodic electrocoating. 4,461,880, Cl. 525-528.000.
Girard, Henri, to Canadian Patents & Development Limited. Baseband linearizer for wideband, high power, nonlinear amplifiers. 4,462,001, Cl. 330-149.000.
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Gottlob, Clifford E., to Gottlob Engine Conversions, Inc. Engine mounting frame. 4,461,447, Cl. 248-678.000.
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Gregory, Walter A., to Du Pont de Nemours, E. I., and Company. P-Oxooxazolidinylbenzene compounds as antibacterial agents. 4,461,773, Cl. 424-272.000.
Griffin, Wendell L., to Wells Electronics, Inc. Integrated circuit test socket. 4,461,525, Cl. 339-75.00M.
Grikis, Raimonds, to Duo-Fast Corporation. Fastener feeder. 4,461,380, Cl. 198-389.000.
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Grohn, Michael, to Daimler-Benz Aktiengesellschaft. Exhaust gas return pipe connection for an internal combustion engine. 4,461,150, Cl. 60-605.000.
Grondalski, David, to Data General Corporation. Apparatus for fetching and decoding instructions. 4,462,073, Cl. 364-200.000.
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Guenther, John L., to Texticon. Video controller spring mounting. 4,461,935, Cl. 200-5.00R.
Gueret, Jean-Louis H., to L'Oreal. Eyelash brush and method and apparatus for manufacturing same. 4,461,312, Cl. 132-88.700.
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Gwynette, Greswold; and Cordaro, Robert S., to PPG Industries, Inc. Fiber glass filament wound wheel. 4,461,515, Cl. 301-63.0PW.
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Hacke, Joseph F.; Banks, Arthur J.; and Bazin, Lucas J., to RCA Corporation. Square-wave symmetry corrector. 4,461,962, Cl. 307-265.000.
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Hakulinen, Risto; Salkinoja-Salonen, Miria; Rasanen, Jorma; and Kyytsonen, Juhani, to Enso-Gutzeit Oy. Procedure for purifying effluent waters, particularly those produced in wood-processing industry. 4,461,708, Cl. 210-605.000.
Halcon SD Group, Inc., The: *See*—
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Hall, Richard I., to Foster Wheeler Limited. Sonic cleaning device and method. 4,461,651, Cl. 134-1.000.
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Hammond, Philip G., to Kimberly-Clark Corporation. Fitted sheet with elastic restraints. 4,461,049, Cl. 5-498.000.
Han, Eui M., to Shinhan Kongki Co., Ltd. Vane wheel water meter. 4,461,174, Cl. 73-275.000.
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Hannibal, Billy B.; Wise, Kennard L.; and Jacoby, Thomas A., to Tecumseh Products Company. Hermetic refrigeration compressor installation and method. 4,461,446, Cl. 248-634.000.
Hanson, Donald O., to Phillips Petroleum Company. Separation of solid polymers and liquid diluent. 4,461,889, Cl. 528-498.000.
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Harada, Yuho; and Kuwayama, Shigeo, to Fuji Photo Optical Co., Ltd. Acid-soluble glass composition for making flexible fiber optic bundle. 4,461,841, Cl. 501-37.000.
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Hargis, Billy M., to General Electric Ceramics, Inc. Method for preparing ceramic articles having raised, selectively metallized electrical contact points. 4,461,077, Cl. 29-843.000.
Harigane, Kotaro; Takahashi, Kenichi; Shudo, Hirokazu; and Tando, Shuichi, to TDK Corporation. Apparatus for mounting chip type circuit elements on printed circuit boards. 4,461,610, Cl. 414-752.000.
Harkus, Lance, to Pandrol Limited. Railway spike and an assembly on a railway track incorporating the spike. 4,461,422, Cl. 238-366.000.
Harms, Hans W.; and Reimann, Ditmar, to Intertractor Viehmann GmbH & Co. Seal for link of track chain. 4,461,488, Cl. 277-92.000.
Harper, James B., to Harford Overseas Limited. Combined plates and glass holders. 4,461,396, Cl. 220-23.830.
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Harris, James J.; Hostetler, Donald E.; and Achorn, G. Stanley, to National Distillers and Chemical Corporation. Catalyst dispersion having improved stability against phase separation. 4,461,846, Cl. 502-105.000.
Harris, Kenneth, to Cannon-Muskegon Corporation. High ductility nickel alloy directional casting of parts for high temperature and stress operation. 4,461,659, Cl. 148-404.000.
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Harrow, Nettie P., to Pena Productions, Inc. Camera carrying harnesses. 4,461,411, Cl. 224-208.000.
Hart, Kenneth J.; and Smith, Colin P., to Rolls-Royce Limited. Oil cooler. 4,461,340, Cl. 165-39.000.
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Suzuki, Yutaka; Tanaka, Taro; Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; and Haseda, Satoshi, 4,461,170, Cl. 73-119.00A.
Hasegawa, Kinichi: *See*—
Murase, Itaru; Saisu, Tadakatsu; and Hasegawa, Kinichi, 4,461,777, Cl. 426-330.600.
Hasegawa, Shumpei, to Honda Motor Co., Ltd. Electronic fuel injection control system for internal combustion engines having exhaust gas recirculation control devices. 4,461,263, Cl. 123-571.000.
Hashimoto Corporation: *See*—
Hashimoto, Kazuo, 4,461,928, Cl. 179-7.00R.
Hashimoto, Kazuo, to Hashimoto Corporation. Telephone charge system for displaying allotment of charges between a calling party and a called party. 4,461,928, Cl. 179-7.00R.
Hashimoto, Mitsuyoshi, to General Electric Company. Foam-forming organopolysiloxane composition. 4,461,851, Cl. 521-110.000.
Hasler AG Bern: *See*—
Braun, Fritz, 4,462,099, Cl. 371-22.000.
Hatanaka, Katsunori; Hirai, Yutaka; Ayata, Naoki; and Uzawa, Shunichi, to Canon Kabushiki Kaisha. Solid-state photoelectric converter. 4,461,956, Cl. 250-578.000.
Hatotani, Hisashi: *See*—
Itabashi, Keiji; Morishita, Satoru; and Hatotani, Hisashi, 4,461,631, Cl. 55-66.000.
Hattori, Tadashi: *See*—
Sato, Susumu; Hattori, Tadashi; Ueno, Yoshiki; and Taguchi, Takashi, 4,461,532, Cl. 350-1.600.
Haub, Martin: *See*—
Baumgart, Hans J.; Albrecht, Klaus; and Haub, Martin, 4,461,175, Cl. 73-295.000.
Hauni-Werke Korber & Co. KG.: *See*—
Hoffmann, Gottfried, 4,461,307, Cl. 131-84.00B.
Hayashi, Junichi: *See*—
Mizushima, Nobuyuki; Murata, Kyohei; Tamaki, Hiroshi; Hayashi, Junichi; and Ohkubo, Fujio, 4,461,462, Cl. 266-117.000.
Hayashi, Kazumi: *See*—
Osaki, Hichiro; and Hayashi, Kazumi, 4,461,975, Cl. 315-82.000.
Hayashi, Yoshimasa, to Nissan Motor Company, Ltd. Cylinder block. 4,461,247, Cl. 123-41.790.
Hayes, Gerald: *See*—
Simonds, Gary; Remick, Robert; and Hayes, Gerald, 4,461,267, Cl. 124-23.00R.
Headrick, Edward E. Flying disc entrapment assembly. 4,461,484, Cl. 273-400.000.
Heath, Richard W., to Tolco Incorporated. Pipe hanger for composite pipe hanger nut. 4,461,440, Cl. 248-59.000.

Hebden, Dennis; and Brooks, Charles T., to British Gas Corporation. Method for the gasification of solid carbonaceous fuel. 4,461,628, Cl. 48-197.00R.

Hebenstreit, Ernst, to Siemens Aktiengesellschaft. Circuit for controlling at least one power-FET. 4,461,966, Cl. 307-571.000.

Heep, Dieter; and Eberhard, Norbert, to Waeschle Maschinenfabrik GmbH. Slide valve for container of bulk material. 4,461,451, Cl. 251-63.500.

Heidingsfeld, Viktor: *See*—
Hudecek, Slavko; Hnidek, Jaroslav; Heidingsfeld, Viktor; Kolarik, Jan; and Zelinger, Jiri, 4,461,847, Cl. 521-27.000.

Heil Co., The: *See*—
Boda, Robert H., 4,461,608, Cl. 414-408.000.
Smith, Fred T., 4,461,607, Cl. 414-406.000.

Heitmann, Jurgen, to Robert Bosch GmbH. Process for producing a video signal recorded on a record carrier. 4,462,049, Cl. 360-10.200.

Held, Robert P., to Du Pont de Nemours, E. I., and Company. Multiple transfer of tacky image areas using prolonged tack toners. 4,461,823, Cl. 430-120.000.

Helinski, Edward F., to International Business Machines Corporation. Actuator mechanism for a printer or the like using dual magnets. 4,461,207, Cl. 101-93.480.

Heliotronic Forschungs- und Entwicklungs Gesellschaft fur Solarzellen-Grundstoffe mbH: *See*—
Seifert, Dieter; Sirtl, Erhard; and Gessert, Cord, 4,461,671, Cl. 156-607.000.

Heller, Donald F.: *See*—
Tuccio, Sam A.; and Heller, Donald F., 4,461,686, Cl. 204-157.10R.

Hellouin de Menibus, Olivier, to Appareillages et Materiels de Servitudes (A.M.S.). Apparatus for protecting differential pressure measurement apparatus against exceeding a maximum allowable differential pressure. 4,461,180, Cl. 73-706.000.

Hemmerling, Gene A., to American Metal Door Company, Inc. Pass door assembly. 4,461,120, Cl. 49-169.000.

Hendry, Lawrence B.; Bransome, Edwin D., Jr.; Hutson, Marion S.; and Campbell, Lillian K., to Medical College of Georgia Research Inst. Method of predicting biological activity of compounds by nucleic acid models. 4,461,619, Cl. 434-295.000.

Henson, William. Ball court with multiple rebound surfaces. 4,461,469, Cl. 272-3.000.

Henthorn, G. Gene: *See*—
Erwin, Charles W., 4,461,113, Cl. 43-15.000.

Herb, Rudolf, to Albert-Frankenthal AG. Strand length for conveying and slowing down folded products. 4,461,467, Cl. 271-202.000.

Herd, William H., Jr.; and Curtis, Stanley F., to Pollution Controls Industries, Inc. Carburetor. 4,461,731, Cl. 261-18.00B.

Hermann Wiederhold GmbH: *See*—
Baulmann, Wilhelm L., 4,461,784, Cl. 427-44.000.

Hermecz, Istvan; Meszaros, Zoltan; Breining, Tibor; Virag, Sandor; Vasvari nee Debreczy, Lelle; Horvath, Agnes; Nagy, Gabor; Mandi, Attila; Szucs, Tamas; Bitter, Istvan; and Sebestyen, Gyula, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. Nitrogen bridgehead compounds having anti-allergic effect. 4,461,769, Cl. 424-251.000.

Hernandez, Lupe E. Cotton shredder. 4,461,139, Cl. 56-14.500.

Herrick, Robert S. Laser punctal occlusion. 4,461,295, Cl. 128-303.100.

Herrick, William H.: *See*—
Ashley, Robert J., Sr.; and Herrick, William H., 4,461,437, Cl. 244-137.00R.

Hershberger, Charles L.; Merkel, Kurt E.; Weeks, Robert E.; and Wild, Gene M., to Eli Lilly and Company. Antibiotic A-4696 factor G. 4,461,723, Cl. 260-112.50R.

Higuchi, Seizun; Kamada, Minoru; Tano, Kazuhiro; Fushino, Tetsuo; and Fujinaga, Minoru, to Nippon Steel Corporation. Method of making steel sheet plated with Pb-Sn alloy for automotive fuel tank. 4,461,679, Cl. 204-27.000.

Hika, Yoshihiko: *See*—
Miida, Takashi; Hika, Yoshihiko; and Takei, Akira, 4,462,089, Cl. 365-185.000.

Hilbertz, Wolf H., to Marine Resources Company, The. Accretion coating and mineralization of materials for protection against biodegradation. 4,461,684, Cl. 204-132.000.

Hildebrandt, Norbert; and Becker, Norbert. Cupboard with metal framed side walls. 4,461,519, Cl. 312-257.00A.

Hill, Don C.: *See*—
Weissing, Otto; and Hill, Don C., 4,461,067, Cl. 29-564.100.

Hilts, Robert L.: *See*—
Vinzant, Michael B.; Speegle, Steven C.; Meaders, Michael W.; and Hilts, Robert L., 4,461,353, Cl. 166-322.000.

Hines, John E.: *See*—
Deering, Roland F.; Dhondt, Roland O., deceased; and Hines, John E., 4,461,673, Cl. 201-1.000.

Hiniker Company: *See*—
Peterson, Richard L.; Johnson, James A.; Scheurer, Roger J.; and Steinberg, Richard W., 4,461,355, Cl. 172-156.000.

Hinkel, Holger; Kaus, Gerhard; Kraus, Georg; Kunzel, Ulrich; and Muehl, Reinhold, to International Business Machines Corporation. Plasma reactor for etching and coating substrates. 4,461,237, Cl. 118-50.100.

Hirai, Yutaka: *See*—
Hatanaka, Katsunori; Hirai, Yutaka; Ayata, Naoki; and Uzawa, Shunichi, 4,461,956, Cl. 250-578.000.
Nakagawa, Katsumi; Komatsu, Toshiyuki; Hirai, Yutaka; Misumi, Teruo; and Fukuda, Tadaji, 4,461,819, Cl. 430-59.000.

Hiraike, Fumiaki, to Konishiroku Photo Industry Co., Ltd. Exposure ascertaining device for cameras. 4,461,559, Cl. 354-432.000.

Hiraishi, Shigetoshi: *See*—
Nakasato, Yukiya; Kuramoto, Atsuo; Morishita, Sadao; and Hiraishi, Shigetoshi, 4,461,495, Cl. 346-211.000.

Hirata, Yasuo: *See*—
Yasuda, Yutaka; Hirata, Yasuo; and Ogawa, Akira, 4,462,101, Cl. 371-43.000.

Hirose, Takashi: *See*—
Itoh, Hiromichi; Hirose, Takashi; and Yamamoto, Akira, 4,461,817, Cl. 429-209.000.

Hiroyashi Iizuka: *See*—
Masaki, Saburou, 4,461,223, Cl. 110-215.000.

Hitachi, Ltd.: *See*—
Hoshino, Yoshiyuki; Imazu, Shyuichi; Miyai, Masahiko; Oshima, Yoshikuni; and Izumiya, Masakiyo, 4,461,346, Cl. 165-114.000.
Mikoshiba, Shigeo; Shimada, Shinichi; and Shirai, Shoji, 4,461,978, Cl. 315-169.400.
Mori, Kinji; and Ihara, Hirokazu, 4,462,075, Cl. 364-200.000.
Sugiura, Noboru, 4,461,265, Cl. 123-651.000.
Suzuki, Satoshi, 4,461,149, Cl. 60-602.000.
Tennichi, Yasuhiro; and Honda, Naganobu, 4,461,152, Cl. 60-660.000.
Yamaguchi, Kunihiko; and Homma, Noriyuki, 4,461,992, Cl. 323-313.000.
Yokoyama, Hiroshi; Kuge, Toshio; Nogita, Shunsuke; and Nakamura, Yoichi, 4,461,627, Cl. 44-23.000.

Hiyoshi, Teruo; Okamoto, Eisaku; Aoki, Eiichiro; Sugiura, Toshio; and Kozuki, Koichi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instruments. 4,461,199, Cl. 84-1.190.

Hnidek, Jaroslav: *See*—
Hudecek, Slavko; Hnidek, Jaroslav; Heidingsfeld, Viktor; Kolarik, Jan; and Zelinger, Jiri, 4,461,847, Cl. 521-27.000.

Ho, Irving T.; and Riseman, Jacob, to International Business Machines Corporation. Single electrode U-MOSFET random access memory. 4,462,040, Cl. 357-23.000.

Ho, Winston: *See*—
Stanley, Kerry G.; and Ho, Winston, 4,461,775, Cl. 424-311.000.

Hobo, Nobuhito: *See*—
Ito, Osamu; Hobo, Nobuhito; and Nakamura, Tetsuya, 4,462,079, Cl. 364-442.000.
Suzuki, Yutaka; Tanaka, Taro; Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; and Haseda, Satoshi, 4,461,170, Cl. 73-119.00A.

Hodge, Joseph. Surgical saw blade. 4,461,296, Cl. 128-317.000.

Hodogaya Chemical Co., Ltd.: *See*—
Nakamura, Tsutomu; Kuroda, Akira; Onishi, Masatoshi; and Sasaki, Tetsuo, 4,461,852, Cl. 521-121.000.

Hodson, Harold F.: *See*—
Batchelor, John F.; Bauer, Denis J.; Hodson, Harold F.; Selway, John W. T.; and Young, David A. B., 4,461,907, Cl. 549-406.000.

Hoechst Boussel Pharmaceuticals Inc.: *See*—
Lee, Thomas B. K.; and Lee, George E., 4,461,728, Cl. 260-239.0BD.

Hoerner, Griffith L. Retractable, articulated carrier for vehicles. 4,461,413, Cl. 224-311.000.

Hofer, Gerald: *See*—
Eheim, Franz; and Hofer, Gerald, 4,461,255, Cl. 123-357.000.

Hoffmann, Gottfried, to Hauni-Werke Korber & Co. KG. Apparatus for forming a tobacco stream in cigarette making machines or the like. 4,461,307, Cl. 131-84.00B.

Hoffmann-La Roche Inc.: *See*—
Aschwanden, Werner; and Kyburz, Emilio, 4,461,906, Cl. 548-406.000.
Loy, Nicholas J., 4,461,363, Cl. 177-1.000.
Wei, Chung-Chen; and Weigele, Manfred, 4,461,726, Cl. 260-239.00A.

Hofmann, Eberhard; Schneider, Gottfried; and Pohn, Johann, to Schubert & Salzer, AG. Opening device for an open-end spinning apparatus. 4,461,141, Cl. 57-408.000.

Holm, Robert E.: *See*—
Pyne, William J.; Ku, Han S.; and Holm, Robert E., 4,461,899, Cl. 546-203.000.

Holstein und Kappert GmbH: *See*—
Brakelmann, Wolfgang, 4,461,318, Cl. 137-614.190.
Knabe, Uwe; and Unger, Dieter, 4,461,329, Cl. 141-150.000.
Ruppell, Christian, 4,461,653, Cl. 134-10.000.

Holt, Harley R., to Bunker-Ramo Corporation. Apparatus for assembling electrical cables to electrical connectors. 4,461,074, Cl. 29-749.000.

Holt, Lyn, to EMI Limited. Device sensitive to pressure waves. 4,461,179, Cl. 73-658.000.

Holzhaur und Sutter Medizin-technische Gerate und Instrumente GmbH: *See*—
Sutter, Hermann, 4,461,297, Cl. 128-321.000.

Homestake Mining Company: *See*—
Mudder, Terrence I.; and Whitlock, James L., 4,461,834, Cl. 435-253.000.

Homma, Noriyuki: *See*—
Yamaguchi, Kunihiko; and Homma, Noriyuki, 4,461,992, Cl. 323-313.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Ogishima, Tetsuo, 4,461,508, Cl. 296-78.100.
Tsukiji, Kensuke; and Yamazaki, Yukiho, 4,461,489, Cl. 280-5.00A.

Honda, Kazuo, to Honda Motor Co., Ltd. Frame for motorcycles. 4,461,366, Cl. 180-229.000.

Honda Motor Co., Ltd.: *See*—
Hasegawa, Shumpei, 4,461,263, Cl. 123-571.000.

Honda, Kazuo, 4,461,366, Cl. 180-229.000.
Honda, Naganobu: *See—*
Tennichi, Yasuhiro; and Honda, Naganobu, 4,461,152, Cl. 60-660.000.
Honeywell Inc.: *See—*
Ibach, David R., 4,461,162, Cl. 72-344.000.
Van Sloun, Peter H., 4,461,201, Cl. 89-1.00R.
Honeywell Information Systems Inc.: *See—*
Baldwin, David R.; and Lemak, Nicholas S., 4,462,110, Cl. 377-43.000.
Ryan, Joseph L.; Safdie, Elias; Watkins, Richard R.; and Kobs, Frederick E., 4,462,028, Cl. 340-799.000.
Tague, Steven A.; and Negi, Virendra S., 4,462,072, Cl. 364-200.000.
Honkamp, Glenn A.: *See—*
Bowsky, Benjamin; and Honkamp, Glenn A., 4,461,925, Cl. 174-152.0GM.
Hood, Rush W., Jr.; and Medero, Richard, to Critikon, Inc. Adaptive incremental blood pressure monitor. 4,461,266, Cl. 128-681.000.
Hoover, Alan A.; and Harris, Richard D., to Pentek Corporation. Motion detector and control system for an accumulating live conveyor. 4,461,382, Cl. 198-781.000.
Hoover Treated Wood Products, Inc.: *See—*
Loyvet, Andre G.; and Morgan, Dennis J., 4,461,720, Cl. 252-607.000.
Hopkins, Evan L., to Hopkins Manufacturing Corporation. Headlamp adjuster. 4,461,090, Cl. 33-335.000.
Hopkins Manufacturing Corporation: *See—*
Hopkins, Evan L., 4,461,090, Cl. 33-335.000.
Hore, Donald L., to Paraflux Limited. Set square. 4,461,092, Cl. 33-474.000.
Hori, Shozi: *See—*
Ikeda, Shigeru; Hori, Shozi; Eguchi, Kiyohisa; Matsuo, Kanji; Zaima, Hidenori; Gamada, Yoshifumi; and Kondo, Teruhisa, 4,461,806, Cl. 428-408.000.
Horton, Samuel F.: *See—*
Bland, Randall J.; Butler, Ronald W.; and Horton, Samuel F., 4,462,016, Cl. 336-192.000.
Horvath, Agnes: *See—*
Hermecz, Istvan; Meszaros, Zoltan; Breining, Tibor; Virag, Sandor; Vasvari nee Debreczy, Lelle; Horvath, Agnes; Nagy, Gabor; Mandi, Attila; Szucs, Tamas; Bitter, Istvan; and Sebestyen, Gyula, 4,461,769, Cl. 424-251.000.
Horvath, Laszlo S., to Cod Inter Techniques SA. Ventable package cover. 4,461,420, Cl. 229-43.000.
Horvath, Ronald F.; Reid, John R.; and Elsmo, Thad F. Method and apparatus for a game. 4,461,485, Cl. 273-425.000.
Hosaka, Akio; and Aono, Shigeo, to Nissan Motor Company, Limited. Method and system for controlling engine ignition timing. 4,461,257, Cl. 123-419.000.
Hoshino, Yoshiyuki; Imazu, Shyuichi; Miyai, Masahiko; Oshima, Yoshikuni; and Izumiya, Masakiyo, to Hitachi, Ltd. Feedwater heater. 4,461,346, Cl. 165-114.000.
Hostetler, Donald E.: *See—*
Harris, James J.; Hostetler, Donald E.; and Achorn, G. Stanley, 4,461,846, Cl. 502-105.000.
Howe, Robert K.; and Lee, Len F., to Monsanto Company. Herbicidal compositions and method. 4,461,642, Cl. 71-95.000.
Hoyer, Edgar: *See—*
Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Neubert, Peter, 4,461,763, Cl. 424-182.000.
Hoyt, John G. Sailing craft. 4,461,231, Cl. 114-102.000.
Hudecek, Slavko; Hnidek, Jaroslav; Heidingsfeld, Viktor; Kolarik, Jan; and Zelinger, Jiri, to Ceskoslovenska akademie ved. Method for producing thin-walled articles from plastic or rubber. 4,461,847, Cl. 521-27.000.
Hudson, Doyle R.; and Dulaney, Jimmie O., to Quachita Machine Works, Inc. Method and apparatus for enveloping a plurality of items in a stretchable film. 4,461,136, Cl. 53-399.000.
Hudson, Robert H.: *See—*
Hunter, A. Reese; and Hudson, Robert H., 4,461,499, Cl. 285-364.000.
Huey, Wai; Murman, Fernando; and Matsuda, Eugene, to Hydril Company. Well blowout preventer, and packing element. 4,461,448, Cl. 251-1.00B.
Hufnagel, Friedrich: *See—*
Sabisch, Willy; and Hufnagel, Friedrich, 4,461,939, Cl. 200-304.000.
Hughes Aircraft Company: *See—*
Gagnon, Ralph J., 4,461,542, Cl. 350-331.00R.
Hughes, William C., to General Electric Company. Receiver for phase-shift modulated carrier signals. 4,462,109, Cl. 375-97.000.
Hull Corporation: *See—*
Kratschmer, Eric L., 4,461,946, Cl. 219-121.0LC.
Hultsch, Gunther; Baumgartner, Siegfried; Bock, Harald; and Schilp, Reinhold, to Krauss-Maffei Aktiengesellschaft. Apparatus for drying particles and method of operating the apparatus. 4,461,093, Cl. 34-8.000.
Hundal, Rolv; Kessinger, Boyd A.; and Parlak, Edward A., to United States of America, Energy. Overflow control valve. 4,461,317, Cl. 137-565.000.
Hunt, Charles W.: *See—*
Goekler, Robert G.; and Hunt, Charles W., 4,461,429, Cl. 242-7.220.
Hunt, William C., III, to Mobil Oil Corporation. Thermal solvent recovery method utilizing visbroken produced crude oil. 4,461,350, Cl. 166-272.000.
Hunter, A. Reese; and Hudson, Robert H., to Industrial Air, Inc. Transverse joint system for sheet metal ducts. 4,461,499, Cl. 285-364.000.
Hutson, Marion S.: *See—*
Hendry, Lawrence B.; Bransome, Edwin D., Jr.; Hutson, Marion S.; and Campbell, Lillian K., 4,461,619, Cl. 434-295.000.
Hutzenlaub, Armin S. P., to Erwin Kampf GmbH & Co. Maschinenfabrik. Unwinding apparatus for webs of material, in particular plastic films. 4,461,432, Cl. 242-75.510.
Hydril Company: *See—*
Cove, Harry R.; and Muchow, John D., 4,461,316, Cl. 137-312.000.
Huey, Wai; Murman, Fernando; and Matsuda, Eugene, 4,461,448, Cl. 251-1.00B.
Ibach, David R., to Honeywell Inc. Forging of conical liners. 4,461,162, Cl. 72-344.000.
Ichise, Katsuaki: *See—*
Saji, Ikutaro; Yamazaki, Hiroshi; Aono, Shunji; Ichise, Katsuaki; and Okuda, Takao, 4,461,774, Cl. 424-273.00R.
Ihara, Hirokazu: *See—*
Mori, Kinji; and Ihara, Hirokazu, 4,462,075, Cl. 364-200.000.
Iida, Katsuji, to Toyo Denki Seizo Kabushiki Kaisha. DC-DC Converter provided with an AC link. 4,462,070, Cl. 363-28.000.
Iijima, Toshifumi: *See—*
Yamashita, Kiyoshi; and Iijima, Toshifumi, 4,461,826, Cl. 430-505.000.
Iizuka, Chiyokichi: *See—*
Sugano, Nobuhiko; Iizuka, Chiyokichi; and Maeda, Hiroaki, 4,461,760, Cl. 424-177.000.
Iizuka, Hisakazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of operating a semiconductor memory circuit. 4,462,090, Cl. 365-185.000.
Iizuka, Kinji; Kamijo, Tetsuhide; Yamamoto, Ryoji; and Harada, Hiromu, to Ono Pharmaceutical Co., Ltd. Imidazole derivatives. 4,461,905, Cl. 548-341.000.
Ikari, Kazuo; and Fujii, Toru, to Olympus Optical Company, Ltd. Lens hood with an eccentrically disposed light intercepting body for a camera. 4,461,547, Cl. 350-580.000.
Ikeda, Shigeru; Hori, Shozi; Eguchi, Kiyohisa; Matsuo, Kanji; Zaima, Hidenori; Gamada, Yoshifumi; and Kondo, Teruhisa, to Agency of Industrial Science & Technology; Kyowa Carbon Co., Ltd.; and Toyo, Tanso Co., Ltd. Shaped articles of non-fibrous carbonaceous material. 4,461,806, Cl. 428-408.000.
Ikenoue, Yoshikazu, to Minolta Camera Kabushiki Kaisha. Electrophotographic copying apparatus with variable magnification. 4,461,564, Cl. 355-8.000.
Illinois Tool Works Inc.: *See—*
Bury, George J., 4,461,059, Cl. 24-129.00R.
Rayburn, Charles C., 4,462,062, Cl. 361-323.000.
Rodseth, William G., 4,461,593, Cl. 403-11.000.
Imazu, Shyuichi: *See—*
Hoshino, Yoshiyuki; Imazu, Shyuichi; Miyai, Masahiko; Oshima, Yoshikuni; and Izumiya, Masakiyo, 4,461,346, Cl. 165-114.000.
Imperial Chemical Industries Limited: *See—*
Schofield, John D.; and Vinther, Arne, 4,461,647, Cl. 106-308.00N.
Imperial Chemical Industries PLC: *See—*
Rowe, Frederick; and Brown, David, 4,461,742, Cl. 422-129.000.
In-Situ, Inc.: *See—*
McKee, Charles B.; McKee, Duane B.; and Wainwright, H. Kent, 4,461,172, Cl. 73-155.000.
Inderbitzen, Daniel T., to Inderbitzen, Daniel T. Safety latch arrangement for use in a firearm. 4,461,110, Cl. 42-66.000.
Industrial Air, Inc.: *See—*
Hunter, A. Reese; and Hudson, Robert H., 4,461,499, Cl. 285-364.000.
Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,461,954, Cl. 250-492.200.
Inoue, Jiro. Diamond saw. 4,461,268, Cl. 125-15.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Ion-processing method and apparatus. 4,461,954, Cl. 250-492.200.
Inoue, Masaharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Combustion control device. 4,461,615, Cl. 431-76.000.
Instytut Metalurgii Zelaza IM. Stanislawa Staszica: *See—*
Mitka, Boleslaw; Prajsnar, Tadeusz; Mniszek, Karol; Gorecki, Wilhelm; Kolodziejczyk, Franciszek E.; Madry, Jan; Kielpinski, Ryszard; Gorecki, Boguslaw; Kucharski, Kazimierz; Richta, Edmund; and Maciejewski, Jan, 4,461,419, Cl. 228-5.100.
Interelectric AG: *See—*
Futterer, Bodo, 4,461,065, Cl. 29-446.000.
Interlab, Inc.: *See—*
Layton, Howard M.; and Fenton, William, 4,461,347, Cl. 165-133.000.
Interlego A.G.: *See—*
Bach, Erik, 4,461,116, Cl. 446-128.000.
International Business Machines Corporation: *See—*
Giuliani, Sylvester W.; and Park, SeJung, 4,462,088, Cl. 365-105.000.
Helinski, Edward F., 4,461,207, Cl. 101-93.480.
Hinkel, Holger; Kaus, Gerhard; Kraus, Georg; Kunzel, Ulrich; and Muehl, Reinhold, 4,461,237, Cl. 118-50.100.
Ho, Irving T.; and Riseman, Jacob, 4,462,040, Cl. 357-23.000.
Knepper, Ronald W.; Ludlow, Peter J.; and Petrosky, Joseph A., Jr., 4,462,091, Cl. 365-200.000.
Povlick, Timothy R., 4,462,102, Cl. 371-49.000.
International Coal Refining Company: *See—*
Givens, Edwin N.; and Kang, Dohee, 4,461,694, Cl. 208-8.0LE.
International Standard Electric Corporation: *See—*
Vance, Ian A. W., 4,462,107, Cl. 375-88.000.

Intertractor Viehmann GmbH & Co.: *See*—
Harms, Hans W.; and Reimann, Ditmar, 4,461,488, Cl. 277-92.000.
Ionics Incorporated: *See*—
Jain, Surendar M., 4,461,693, Cl. 204-301.000.
Irwin International, Inc.: *See*—
Lum, Francis; Graham, Bruce; Irwin, Samuel N.; and Velazquez, Juan F., 4,462,053, Cl. 360-78.000.
Irwin, Samuel N.: *See*—
Lum, Francis; Graham, Bruce; Irwin, Samuel N.; and Velazquez, Juan F., 4,462,053, Cl. 360-78.000.
Ishibashi, Hiroaki: *See*—
Nishikawa, Masahiko; Ishibashi, Hiroaki; and Furukawa, Hidenori, 4,461,892, Cl. 536-65.000.
Ishii, Daisuke, to Nippon Electric Co., Ltd. Electronic apparatus with audible annunciator and alarm lamp. 4,462,030, Cl. 340-825.440.
Ishii, Keizou: *See*—
Kanda, Kazunori; Ishii, Keizou; Kida, Katsuaki; Ishikura, Shinichi; and Mizuguchi, Ryuzo, 4,461,870, Cl. 525-123.000.
Ishikura, Shinichi: *See*—
Kanda, Kazunori; Ishii, Keizou; Kida, Katsuaki; Ishikura, Shinichi; and Mizuguchi, Ryuzo, 4,461,870, Cl. 525-123.000.
Ishimura, Yohzoh, to Matsushita Electric Industrial Co., Ltd. Fail-safe device for use in a heating apparatus. 4,461,940, Cl. 219-10.55C.
Isobe, Takasi; and Kamata, Shigeru, to Canon Kabushiki Kaisha. Autofocusing lens mounting. 4,461,544, Cl. 350-429.000.
Isomura, Shigenori; Kondo, Toshio; Kaji, Yasumasa; and Kobayashi, Akio, to Nippondenso Co., Ltd. Closed loop air/fuel ratio control using learning data each arranged not to exceed a predetermined value. 4,461,261, Cl. 123-489.000.
Isumi, Kenzo: *See*—
Tachibana, Eiichi; Murayama, Koushou; and Isumi, Kenzo, 4,461,663, Cl. 156-86.000.
Itabashi, Keiji; Morishita, Satoru; and Hatotani, Hisashi, to Toyo Soda Manufacturing Co., Ltd. Zeolite encapsulating material. 4,461,631, Cl. 55-66.000.
Itakura, Gen; and Kuroda, Takayuki, to Matsushita Electric Industrial Co., Ltd. Ceramic composition of high dielectric constant. 4,461,844, Cl. 501-137.000.
Ito, Higashi; and Watanabe, Seiichi, to Denki Kagaku Kogyo Kabushiki Kaisha. Isomerization of dichlorobutenes. 4,461,920, Cl. 570-236.000.
Ito, Hiroshi: *See*—
Kobashi, Mamoru; and Ito, Hiroshi, 4,461,253, Cl. 123-339.000.
Ito, Osamu; Hobo, Nobuhito; and Nakamura, Tetsuya, to Nippondenso Co., Ltd. Apparatus for providing information for agricultural work machine. 4,462,079, Cl. 364-442.000.
Ito, Osamu: *See*—
Suzuki, Yutaka; Tanaka, Taro; Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; and Haseda, Satoshi, 4,461,170, Cl. 73-119.00A.
Itoh, Hiromichi; Hirose, Takashi; and Yamamoto, Akira, to Meidensha Electric Mfg. Co., Ltd. Electrode for electrolyte circulation-type cell stack secondary battery. 4,461,817, Cl. 429-209.000.
Ivanov, Andrei S.: *See*—
Dmitriev, Stanislav P.; Evseev, Anatoly K.; Ivanov, Andrei S.; Komorin, Leonid V.; Nikishkin, Vladimir I.; Nuzhny, Stanislav N.; Rex, Mikhail K.; Sviniin, Mikhail P.; and Fedotov, Mikhail T., 4,461,972, Cl. 313-420.000.
Iwasaki, Shinichiro, to Aisin Seiki Kabushiki Kaisha. Ignition transformer and spark plug cover assembly. 4,461,264, Cl. 123-635.000.
Iwata Electric Co., Ltd.: *See*—
Iwata, Keisuke, 4,462,113, Cl. 455-20.000.
Iwata, Hiroshi: *See*—
Yoshino, Tsunemi; Iwata, Hiroshi; Kashihara, Toshitsugu; and Morioka, Akitoshi, 4,461,560, Cl. 354-475.000.
Iwata, Keisuke, to Iwata Electric Co., Ltd. Cordless transmitting and receiving apparatus. 4,462,113, Cl. 455-20.000.
Izraeli, Hyman, to Thomas & Betts Corporation. Insulation displacing terminal. 4,461,527, Cl. 339-97.00R.
Izumiya, Masakiyo: *See*—
Hoshino, Yoshiyuki; Imazu, Shyuichi; Miyai, Masahiko; Oshima, Yoshikuni; and Izumiya, Masakiyo, 4,461,346, Cl. 165-114.000.
J. I. Case Company: *See*—
May, Dean W., 4,461,315, Cl. 137-255.000.
J. R. Simplot Co.: *See*—
Bierman, Laurence W.; and Polinsky, Samual M., 4,461,746, Cl. 423-8.000.
Jabben, Gary D., to AT&T Technologies, Inc. Click disc switch assembly. 4,461,934, Cl. 200-5.00A.
Jackson, Leon D.; Morris, Dan O.; and Blohm, Alan J., to LDJ Electronics, Inc. Bulk tape erasing system. 4,462,055, Cl. 360-118.000.
Jacobsen, Kevin N. Apparatus for use in fishing. 4,461,112, Cl. 43-4.000.
Jacobson, Howard W., to Du Pont de Nemours, E. I., and Company. TiO_2 Pigment bearing a coating with cerium cations and sulfate-, phosphate- or silicate anions and laminate and coating containing same. 4,461,810, Cl. 428-530.000.
Jacoby, Thomas A.: *See*—
Hannibal, Billy B.; Wise, Kennard L.; and Jacoby, Thomas A., 4,461,446, Cl. 248-634.000.
Jain, Surendar M., to Ionics Incorporated. Polarity reversal electrodes. 4,461,693, Cl. 204-301.000.
Jallen, Gale A., to Control Data Corporation. Speed tolerant alternator system for wind or hydraulic power generation. 4,461,957, Cl. 290-44.000.
Jamet, Jean, to Office National d'Etudes et de Recherches Aerospatiales (Par Abreviation O.N.E.R.A.). Ceramic composite materials with high mechanical and heat resistance and their preparation. 4,461,842, Cl. 501-95.000.
Janda, Jiri; Burdych, Jiri; Lab, Miroslav; and Dlabal, Pavel, to TESLA, koncernovy podnik. Dynamic vibration absorber for a phonograph tone arm. 4,462,097, Cl. 369-248.000.
Japan Bano'k Co., Ltd.: *See*—
Furutsu, Akira, 4,461,417, Cl. 227-67.000.
Japan Synthetic Rubber Co., Ltd.: *See*—
Takeuchi, Yasumasa; Sakakibara, Mitsuhiko; and Shibata, Tooru, 4,461,883, Cl. 526-139.000.
Jawdat, Nameer A. Breech-locking mechanism for firearms. 4,461,203, Cl. 89-154.000.
Jeenicke, Edmund; and Krauter, Immanuel, to Robert Bosch GmbH. Low-drive power switching transistor control circuit. 4,461,979, Cl. 315-209.00T.
Jennings, Robert E.: *See*—
Turner, Robert L.; and Jennings, Robert E., 4,461,386, Cl. 211-41.000.
Jeome, Robert: *See*—
Teyssie, Philippe; Jeome, Robert; Ouhadi, Trazollah; and Fayt, Roger, 4,461,874, Cl. 525-271.000.
Jewell, David G.: *See*—
Blok, Lyubov; and Jewell, David G., 4,461,793, Cl. 428-36.000.
Johns, William H.: *See*—
Stalson, Stanley L.; and Johns, William H., 4,461,654, Cl. 134-10.000.
Johnsen & Jorgensen (Plastics) Limited Company: *See*—
Davis, Eugene E., 4,461,391, Cl. 215-252.000.
Johnson, James A.: *See*—
Peterson, Richard L.; Johnson, James A.; Scheurer, Roger J.; and Steinberg, Richard W., 4,461,355, Cl. 172-156.000.
Johnson & Johnson Dental Products Company: *See*—
DeLuca, Robert D.; and Jones, Robin M. F., 4,461,618, Cl. 433-200.000.
Johnson, Wilbur E., to Econolite Control Products, Inc. Traffic synchronization device. 4,462,031, Cl. 340-916.000.
Johnstone, Richard; and Kirkham, Edward E., to Kearney & Trecker Corporation. Voice actuated machine control. 4,462,080, Cl. 364-513.500.
Jones, Clarence O., Jr.; and Vosteen, William E., to Niagara Machine & Tool Works. Load measuring apparatus. 4,461,182, Cl. 73-862.530.
Jones, David N.; Haapala, Urho S.; and Scarola, Leonard S., to Union Carbide Corporation. Process for plasticization and pumping of low bulk density plastics. 4,461,734, Cl. 264-176.00R.
Jones, Emrys H., Jr.; and Umphrey, Ronald W., to Conoco Inc. Rotary drill indexing system. 4,461,359, Cl. 175-61.000.
Jones, Robin M. F.: *See*—
DeLuca, Robert D.; and Jones, Robin M. F., 4,461,618, Cl. 433-200.000.
Jones, Stanley P.; Gennard, Derek; and Fenton, Frank A., to Emhart Industries, Inc. Control of glassware forming machine. 4,461,637, Cl. 65-158.000.
Jonnes, Nelson, to American Polywater Corporation. Substantially neutral aqueous lubricant. 4,461,712, Cl. 252-49.300.
Joyce, William R.: *See*—
Wiley, Thomas W.; and Joyce, William R., 4,461,431, Cl. 242-57.100.
Juang, Bor L. Portable gas firing apparatus. 4,461,271, Cl. 126-38.000.
Judkins, Donald J. Portable woodworking power tool. 4,461,330, Cl. 144-134.00D.
Jung, Werner; and Mall, Hans-Georg, to Robert Bosch GmbH. Multicolor recording carrier and method of recording. 4,462,038, Cl. 346-163.000.
Kabushiki Kaisha Daisei Kikai: *See*—
Suzuki, Tomosaburo, 4,461,096, Cl. 34-56.000.
Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See*—
Manabe, Masatoshi; Naohara, Jun; and Miyoshi, Hideaki, 4,461,890, Cl. 536-2.000.
Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
Kitagawa, Hiroshi, 4,461,200, Cl. 84-1.210.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Baba, Kiyokazu, 4,461,206, Cl. 100-208.000.
Kabushiki Kaisha Medos Kenkyusho: *See*—
Doi, Yuzuru, 4,461,283, Cl. 128-7.000.
Ouchi, Teruo; and Chikashige, Kiyoshi, 4,461,282, Cl. 128-4.000.
Kabushiki Kaisha Shikishima Chipton: *See*—
Kobayashi, Hisamine, 4,461,123, Cl. 51-163.200.
Kabushiki Kaisha Suwa Seikosha: *See*—
Koto, Haruhiko, 4,462,035, Cl. 346-76.0PH.
Kaiser, Fritz: *See*—
Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Neubert, Peter, 4,461,763, Cl. 424-182.000.
Kaiser, Roman; and Lamparsky, Dietmar, to Givaudan Corporation. Ionyl-alkyl and ionyl alkenyl ethers as flavorants for tobacco. 4,461,309, Cl. 131-276.000.
Kaji, Yasumasa: *See*—
Isomura, Shigenori; Kondo, Toshio; Kaji, Yasumasa; and Kobayashi, Akio, 4,461,261, Cl. 123-489.000.
Kajimoto, Katsuhiko: *See*—
Tansei, Hikaru; Kajimoto, Katsuhiko; and Nomata, Mikio, 4,461,334, Cl. 152-209.00R.
Kajiwara, Toshiro: *See*—
Saikatsu, Takeo; Anzai, Yoshinori; Kajiwara, Toshiro; Kobayashi, Goroku; and Morimoto, Shunichi, 4,461,981, Cl. 315-246.000.

Kakugo, Masahiro: *See*—
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; and Suzuki, Takatoshi, 4,461,881, Cl. 526-118.000.
Kamada, Minoru: *See*—
Higuchi, Seizun; Kamada, Minoru; Tano, Kazuhiro; Fushino, Tetsuo; and Fujinaga, Minoru, 4,461,679, Cl. 204-27.000.
Kamata, Shigeru: *See*—
Isobe, Takasi; and Kamata, Shigeru, 4,461,544, Cl. 350-429.000.
Kamijo, Tetsuhide: *See*—
Iizuka, Kinji; Kamijo, Tetsuhide; Yamamoto, Ryoji; and Harada, Hiromu, 4,461,905, Cl. 548-341.000.
Kanbe, Junichiro: *See*—
Shirai, Shigeru; Kanbe, Junichiro; and Fukuda, Tadaji, 4,461,820, Cl. 430-65.000.
Kanda, Kazunori; Ishii, Keizou; Kida, Katsuaki; Ishikura, Shinichi; and Mizuguchi, Ryuzo, to Nippon Paint Co., Ltd. High solid coating composition containing novel microparticles of crosslinked copolymer including amphoionic groups. 4,461,870, Cl. 525-123.000.
Kanebo, Ltd.: *See*—
Matsui, Masao; Okamoto, Kazuo; and Osagawa, Takao, 4,461,791, Cl. 428-15.000.
Kanebo Synthetic Fibers Ltd.: *See*—
Matsui, Masao; Okamoto, Kazuo; and Osagawa, Takao, 4,461,791, Cl. 428-15.000.
Kanesaka, Hiroshi, to Kanesaka Technical Institute Ltd. Internal combustion engine. 4,461,151, Cl. 60-611.000.
Kanesaka Technical Institute Ltd.: *See*—
Kanesaka, Hiroshi, 4,461,151, Cl. 60-611.000.
Kanetsu Kogyo Kabushiki Kaisha: *See*—
Yamagami, Kikuo; and Yokoyama, Koji, 4,462,059, Cl. 361-149.000.
Kang, Dohee: *See*—
Givens, Edwin N.; and Kang, Dohee, 4,461,694, Cl. 208-8.0LE.
Kani, Tetsuo, to Sony Corporation. Tape speed control apparatus. 4,461,433, Cl. 242-75.510.
Kaplinsky, Cecil H., to U.S. Philips Corporation. Device for interrogating and correcting a serial data signal. 4,462,052, Cl. 360-53.000.
Kapur, V. K.: *See*—
Gay, Charles F.; Kapur, V. K.; and Wilson, James H., 4,461,922, Cl. 136-249.000.
Kara, Stephen. Video tape recorder cleaning device. 4,462,056, Cl. 360-128.000.
Karami, Hamzeh; and Crutzen, Andre , to Colgate-Palmolive Company. Disposable diaper with polymer coating. 4,461,621, Cl. 604-368.000.
Karickhoff, Michael, to Sherwin-Williams Company, The. Vesiculated beads. 4,461,849, Cl. 521-64.000.
Karle, David A.; and Kralovic, Raymond C., to American Sterilizer Company. Contamination-free sterilization indicating system. 4,461,837, Cl. 435-296.000.
Kashihara, Toshitsugu: *See*—
Yoshino, Tsunemi; Iwata, Hiroshi; Kashihara, Toshitsugu; and Morioka, Akitoshi, 4,461,560, Cl. 354-475.000.
Katagi, Takashi: *See*—
Betsudan, Shinichi; Aoki, Katsuhiko; Sato, Shigeru; and Katagi, Takashi, 4,462,034, Cl. 343-761.000.
Katakabe, Noboru: *See*—
Watanabe, Shuichi; Katakabe, Noboru; and Sasaki, Toshiharu, 4,461,588, Cl. 400-144.200.
Katakura, Masayuki, to Sony Corporation. Noise reduction circuit having voltage to current converting means in the auxiliary channel. 4,462,008, Cl. 333-14.000.
Katan, Theodore; and Carlen, Pamela J., to United States of America, Navy. Process for charging silver electrodes to monoxide level. 4,461,677, Cl. 204-2.100.
Kater, John A. R. Ion selective measurements. 4,461,998, Cl. 324-438.000.
Kato, Tiharu; Nakamura, Hatsuo; Koguchi, Shigeo; Yonezawa, Toshio; and Abe, Toshihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for forming resist pattern. 4,461,825, Cl. 430-273.000.
Katoh, Hideo: *See*—
Adachi, Tomio; Katoh, Hideo; and Yamamoto, Atsushi, 4,461,797, Cl. 428-147.000.
Kaufman, Edward R., to Glennco Trust. Friction lining material. 4,461,643, Cl. 106-36.000.
Kaufman, Rudolph; and Thouret, Wolfgang E., to Duro-Test Corporation. Energy-efficient incandescent lamp with improved filament characteristics. 4,461,973, Cl. 315-56.000.
Kaus, Gerhard: *See*—
Hinkel, Holger; Kaus, Gerhard; Kraus, Georg; Kunzel, Ulrich; and Muehl, Reinhold, 4,461,237, Cl. 118-50.100.
Kawabuchi, Masami; Satoh, Junichi; Muramatsu, Fumio; and Saitoh, Koetsu, to Matsushita Electric Industrial Company, Limited. Scan ultrasonic transducer array. 4,462,092, Cl. 367-105.000.
Kawamatsu, Yutaka; and Fujita, Takeshi, to Takeda Chemical Industries, Ltd. Thiazolidine derivatives and production thereof. 4,461,902, Cl. 548-183.000.
Kawamura, Masaharu: *See*—
Murakami, Hiroyasu; Uchiyama, Takashi; Suzuki, Ryoichi; Kawamura, Masaharu; Sakai, Shinji; and Momiyama, Kikuo, 4,462,025, Cl. 340-753.000.
Kawanishi, Toshiyuki; and Tabata, Yukio, to Ricoh Company, Ltd. Ink ribbon for use in electrothermic non-impact recording. 4,461,586, Cl. 400-120.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Nagata, Osamu; Matsukura, Satoru; Yamada, Hajime; and Sasaki, Yozo, 4,461,142, Cl. 60-39.020.
Kaye, Wilbur I.; Sun, Lilla S.; and Anderson, John C., to Beckman Instruments, Inc. Wavelength accuracy test solution. 4,461,718, Cl. 252-408.100.
Kearney & Trecker Corporation: *See*—
Johnstone, Richard; and Kirkham, Edward E., 4,462,080, Cl. 364-513.500.
Keenan, E. Dale. Holster holder for bed. 4,461,442, Cl. 248-205.100.
Keller, Douglas V., Jr.: *See*—
Smith, Clay D.; and Keller, Douglas V., Jr., 4,461,625, Cl. 44-10.00R.
Kempf, Dennis D.; and Cordero, Carlos A., to FMC Corporation. Valveless metering dispenser. 4,461,400, Cl. 222-1.000.
Kenan, Richard P.: *See*—
Sherman, Rand C.; and Kenan, Richard P., 4,461,533, Cl. 350-372.000.
Kendall, Larry J., to Memorex Corporation. Accurate high speed absolute value circuit and method. 4,461,961, Cl. 307-261.000.
Kenney, James W., to Drummond Scientific Company. Pipette device. 4,461,328, Cl. 141-67.000.
Kent, Albert C.; and Rosen, Howard N., to United States of America, Agriculture. Psychrometer for measuring the humidity of a gas flow. 4,461,167, Cl. 73-29.000.
Kent Heating Limited: *See*—
Barker, Anthony M.; and Lockhart, Robert N., 4,461,273, Cl. 126-77.000.
Kerber, George L.; and Squire, William D., to GTI Corporation. Combination low inductance fuse and electromagnetic noise filter. 4,462,012, Cl. 333-167.000.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Knieper, Josef; Printz, Heinz; and May, Karl, 4,461,722, Cl. 252-628.000.
Kerr, George T.: *See*—
Dessau, Ralph M.; and Kerr, George T., 4,461,845, Cl. 502-27.000.
Kerridge, David H., to National Research Development Corporation. Fused salt bath composition. 4,461,655, Cl. 148-15.500.
Kessinger, Boyd A.: *See*—
Hundal, Rolv; Kessinger, Boyd A.; and Parlak, Edward A., 4,461,317, Cl. 137-565.000.
Kesson, James, to Scottish & Newcastle Breweries Limited. Method of and apparatus for monitoring concentration of gas in a liquid. 4,461,165, Cl. 73-19.000.
Kida, Katsuaki: *See*—
Kanda, Kazunori; Ishii, Keizou; Kida, Katsuaki; Ishikura, Shinichi; and Mizuguchi, Ryuzo, 4,461,870, Cl. 525-123.000.
Kidde Reaction Products, Inc.: *See*—
Simonds, Gary; Remick, Robert; and Hayes, Gerald, 4,461,267, Cl. 124-23.00R.
Kielpinski, Ryszard: *See*—
Mitka, Boleslaw; Prajsnar, Tadeusz; Mniszek, Karol; Gorecki, Wilhelm; Kolodziejczyk, Franciszek E.; Madry, Jan; Kielpinski, Ryszard; Gorecki, Boguslaw; Kucharski, Kazimierz; Richta, Edmund; and Maciejewski, Jan, 4,461,419, Cl. 228-5.100.
Kikkoman Corporation: *See*—
Furukawa, Toshio, 4,461,702, Cl. 209-303.000.
Killion, Richard H., to Westinghouse Electric Corp. Test system for wave guide arc detector circuits. 4,461,571, Cl. 356-256.000.
Kim, Michael S.: *See*—
Thiele, Alfred W.; McLain, Robert E.; Martinez, Modesto T., Jr.; Lewis, Richard C.; and Kim, Michael S., 4,462,082, Cl. 364-571.000.
Kim, Sunyong P. Golf club of the driver type. 4,461,481, Cl. 273-170.000.
Kimberly-Clark Corporation: *See*—
Hammond, Philip G., 4,461,049, Cl. 5-498.000.
Mathews, John H.; DeLucia, Mary L.; and Mattina, Charles F., 4,461,311, Cl. 131-365.000.
Kimura, Kaoru; and Nakano, Mitsuyoshi, to Yaskawa Electric Mfg. Co., Ltd. Contact sensing device. 4,461,936, Cl. 200-61.410.
Kimura, Kazuo, to Minolta Camera Kabushiki Kaisha. Mirror arrangement for use in a single lens reflex camera. 4,461,557, Cl. 354-402.000.
Kimura, Tetsuya: *See*—
Tanikawa, Kowji; Matsui, Koichi; Kimura, Tetsuya; Takamatsu, Takeshi, deceased; and Takamatsu, Tokuyuki, legal representative, 4,461,558, Cl. 354-416.000.
King, Ace E.: *See*—
Schmidt, Richard O.; and King, Ace E., 4,461,132, Cl. 52-656.000.
King, Charles, to Courser Incorporated. Optical measuring system. 4,461,576, Cl. 356-375.000.
King, Robert E.: *See*—
Pratt, William J.; and King, Robert E., 4,461,373, Cl. 192-4.00A.
Kino Precision Industries, Ltd.: *See*—
Yokotsuka, Akio, 4,461,545, Cl. 350-429.000.
Kircaldie, Randall, and McNab: *See*—
Chen, Kevin C. S., 4,461,293, Cl. 128-204.230.
Kirkham, Edward E.: *See*—
Johnstone, Richard; and Kirkham, Edward E., 4,462,080, Cl. 364-513.500.
Kis France: *See*—
Thebault, Claude, 4,461,105, Cl. 40-152.000.
Kishimura, Kotaro: *See*—
Shiomi, Teiichi; and Kishimura, Kotaro, 4,461,809, Cl. 428-482.000.

Kitagawa, Hiroshi, to Kabushiki Kaisha Kawai Gakki Seisakusho. Electronic musical instrument. 4,461,200, Cl. 84-1.210.
Klaubert, Dieter H., to American Home Products Corporation. 4,5-Dihydrothiadiazole 1,1-dioxide derivatives. 4,461,900, Cl. 546-209.000.
Klee, George; De Noma, George R.; Collier, Stephen L.; and Newman, Rodney J., to Cincinnati Tool, Division of Warren Tool Corporation. Drilling fixture. 4,461,603, Cl. 408-115.00R.
Klefenz, Heinrich: *See*—
Tachang, Chung-Ji; Klefenz, Heinrich; Sanner, Axel; and Zahn, Wolfgang, 4,461,832, Cl. 435-176.000.
Klinedinst, Keith A., to GTE Laboratories Incorporated. Electrochemical cell. 4,461,814, Cl. 429-42.000.
Klotz, Marvin R., to Standard Oil Company (Indiana). Catalytic compositions and process uses. 4,461,921, Cl. 583-481.000.
Knabe, Uwe; and Unger, Dieter, to Holstein und Kappert GmbH. Arrangement for centering containers in bottle treatment machines. 4,461,329, Cl. 141-150.000.
Knapp, Harold M.; and Tremblay, Bernard A., to General Electric Company. High voltage air core reactor. 4,462,017, Cl. 336-207.000.
Knepper, Ronald W.; Ludlow, Peter J.; and Petrosky, Joseph A., Jr., to International Business Machines Corporation. Word group redundancy scheme. 4,462,091, Cl. 365-200.000.
Knieper, Josef; Printz, Heinz; and May, Karl, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method of solidifying waste materials, such as radioactive or toxic materials, contained in aqueous solutions. 4,461,722, Cl. 252-628.000.
Knoebl, Emmerich. Soffit and fascia construction. 4,461,128, Cl. 52-94.000.
Kobashi, Mamoru; and Ito, Hiroshi, to Toyota Jidosha Kabushiki Kaisha. Method of controlling the idle rotational speed of an internal combustion engine. 4,461,253, Cl. 123-339.000.
Kobayashi, Akio: *See*—
Isomura, Shigenori; Kondo, Toshio; Kaji, Yasumasa; and Kobayashi, Akio, 4,461,261, Cl. 123-489.000.
Kobayashi, Goroku: *See*—
Saikatsu, Takeo; Anzai, Yoshinori; Kajiwara, Toshiro; Kobayashi, Goroku; and Morimoto, Shunichi, 4,461,981, Cl. 315-246.000.
Kobayashi, Hisamine, to Kabushiki Kaisha Shikishima Chipton. Long-travel annular vibratory barrel finishing apparatus for line-processing. 4,461,123, Cl. 51-163.200.
Kobayashi, Masami. Hydrogen embrittlement tester. 4,461,168, Cl. 73-87.000.
Kobayashi, Masato; Fukuzono, Hideki; and Nishimura, Hiromi, to Matsushita Electric Works, Ltd. A.C. Switching circuit. 4,462,057, Cl. 361-2.000.
Kobayashi, Taishi: *See*—
Takamizawa, Minoru; Umemura, Mitsuo; and Kobayashi, Taishi, 4,461,908, Cl. 556-430.000.
Kobs, Frederick E.: *See*—
Ryan, Joseph L.; Safdie, Elias; Watkins, Richard R.; and Kobs, Frederick E., 4,462,028, Cl. 340-799.000.
Koefferlein, Rainer: *See*—
Baier, Erich; Koefferlein, Rainer; and Schlageter, Bernhard, 4,461,238, Cl. 118-658.000.
Kogelschatz, Ulrich: *See*—
Erni, Peter; Kogelschatz, Ulrich; Strassler, Sigfrid; and Wiesmann, Hans-Jurg, 4,461,744, Cl. 422-186.180.
Koguchi, Shigeo: *See*—
Kato, Tiharu; Nakamura, Hatsuo; Koguchi, Shigeo; Yonezawa, Toshio; and Abe, Toshihiro, 4,461,825, Cl. 430-273.000.
Kohn, Henri A., to Baltek Corporation. Contoured balsa-core laminate. 4,461,666, Cl. 156-222.000.
Kokusai Denshin Denwa Co., Ltd.: *See*—
Yasuda, Yutaka; Hirata, Yasuo; and Ogawa, Akira, 4,462,101, Cl. 371-43.000.
Kolarik, Jan: *See*—
Hudecek, Slavko; Hnidek, Jaroslav; Heidingsfeld, Viktor; Kolarik, Jan; and Zelinger, Jiri, 4,461,847, Cl. 521-27.000.
Kolb, Walter; and Weid, Helmut, to Wolfe-Gerate GmbH. Furrower with removable shares. 4,461,357, Cl. 172-373.000.
Kolm, Eric A.; and Kolm, Henry H., to Piezo Electric Products, Inc. Piezoelectric relay with magnetic detent. 4,461,968, Cl. 310-332.000.
Kolm, Henry H.: *See*—
Kolm, Eric A.; and Kolm, Henry H., 4,461,968, Cl. 310-332.000.
Kolodziejczyk, Franciszek E.: *See*—
Mitka, Boleslaw; Prajsnar, Tadeusz; Mniszek, Karol; Gorecki, Wilhelm; Kolodziejczyk, Franciszek E.; Madry, Jan; Kielpinski, Ryszard; Gorecki, Boguslaw; Kucharski, Kazimierz; Richta, Edmund; and Maciejewski, Jan, 4,461,419, Cl. 228-5.100.
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Nakagawa, Katsumi; Komatsu, Toshiyuki; Hirai, Yutaka; Misumi, Teruo; and Fukuda, Tadaji, 4,461,819, Cl. 430-59.000.
Komenou, Kazunari: *See*—
Satoh, Yoshio; Ohashi, Makoto; Miyashita, Tsutomu; Matsuda, Kazuo; and Komenou, Kazunari, 4,462,087, Cl. 365-36.000.
Kometani, Kiichi; Yamamoto, Yoshiyuki; and Yanagi, Masana, to Toray Industries, Inc. Polyester resinous composition, molded articles and process for preparation thereof. 4,461,871, Cl. 525-166.000.
Komorin, Leonid V.: *See*—
Dmitriev, Stanislav P.; Evseev, Anatoly K.; Ivanov, Andrei S.; Komorin, Leonid V.; Nikishkin, Vladimir I.; Nuzhny, Stanislav N.; Rex, Mikhail K.; Sviniin, Mikhail P.; and Fedotov, Mikhail T., 4,461,972, Cl. 313-420.000.
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Sano, Kenji; Kondo, Syunichi; and Sato, Hideo, 4,461,821, Cl. 430-83.000.
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Ikeda, Shigeru; Hori, Shozi; Eguchi, Kiyohisa; Matsuo, Kanji; Zaima, Hidenori; Gamada, Yoshifumi; and Kondo, Teruhisa, 4,461,806, Cl. 428-408.000.
Kondo, Toshio: *See*—
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Konishi, Jin-emon, to Nippon Zoki Pharmaceutical Co., Ltd. Peptide compounds, a process for manufacturing them, pharmaceutical compositions containing them, and methods for treating ulcer and thrombus with them. 4,461,724, Cl. 260-112.50R.
Konishiroku Photo Industry Co., Ltd.: *See*—
Hiraike, Fumiaki, 4,461,559, Cl. 354-432.000.
Uchida, Tohru; Suzuki, Shigehiro; Yajima, Tatsuo; and Seto, Yutaka, 4,461,466, Cl. 271-22.000.
Yamashita, Kiyoshi; and Iijima, Toshifumi, 4,461,826, Cl. 430-505.000.
Kool-Fire Limited: *See*—
Vandervaart, Gerry, 4,461,345, Cl. 165-113.000.
Koomen, Joannes J. M., to Signetics Corporation. MOS Power-on reset circuit. 4,461,963, Cl. 307-279.000.
Kopp, Warner. Game apparatus employing cards and dice. 4,461,483, Cl. 273-265.000.
Kopse, Odon; and Rodriguez-Amaya, Nestor, to Robert Bosch GmbH. Fuel injection nozzle. 4,461,427, Cl. 239-533.500.
Korn, Gerhard: *See*—
Girod, Hanjochen; and Korn, Gerhard, 4,461,217, Cl. 105-135.000.
Korn, Peter, to Maxwell Laboratories, Inc. Tamper-proof closure and container arrangement. 4,461,389, Cl. 215-246.000.
Korsunsky, Iosif: *See*—
Bakermans, Johannes C. W.; Grabbe, Dimitry G.; and Korsunsky, Iosif, 4,461,522, Cl. 339-17.00M.
Koschinek, Gunter; Wandel, Dietmar; and Thone, Ludger, to Davy McKee A.G. Process for spin-stretching of high strength technical yarns. 4,461,740, Cl. 264-210.800.
Koto, Haruhiko, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Non-impact recording device. 4,462,035, Cl. 346-76.0PH.
Kovalovsky, Oscar. Fishing reel. 4,461,435, Cl. 242-214.000.
Kozuki, Koichi: *See*—
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Kralovic, Raymond C.: *See*—
Karle, David A.; and Kralovic, Raymond C., 4,461,837, Cl. 435-296.000.
Kralowetz, Bruno. Swaging machine. 4,461,163, Cl. 72-402.000.
Kramer, Kenneth D., to Deere & Company. Electrohydraulic valve. 4,461,314, Cl. 137-106.000.
Kratochmer, Eric L., to Hull Corporation. Apparatus for clamping an assembly of parts for laser welding. 4,461,946, Cl. 219-121.0LC.
Kraus, Georg: *See*—
Hinkel, Holger; Kaus, Gerhard; Kraus, Georg; Kunzel, Ulrich; and Muehl, Reinhold, 4,461,237, Cl. 118-50.100.
Krauss-Maffei Aktiengesellschaft: *See*—
Hultsch, Gunther; Baumgartner, Siegfried; Bock, Harald; and Schilp, Reinhold, 4,461,093, Cl. 34-8.000.
Krauter, Immanuel: *See*—
Jeenicke, Edmund; and Krauter, Immanuel, 4,461,979, Cl. 315-209.00T.
Krawiecki, Peter: *See*—
Appelblatt, Irving; and Krawiecki, Peter, 4,461,202, Cl. 89-40.00B.
Krejza, Jurgen, to Wurttembergische Metallwarenfabrik. Valve assembly for a pressure-cooker. 4,461,452, Cl. 251-144.000.
Kremer, Manfred: *See*—
Krohling, Erich; and Kremer, Manfred, 4,461,958, Cl. 290-45.000.
Kroenke, William J.; and Nicholas, Paul P., to B. F. Goodrich Company, The. Process for the oxychlorination of an alkane using a solid solution catalyst containing iron cations. 4,461,919, Cl. 570-224.000.
Krogmann, Uwe, to Bodenseewerk Geratetechnik GmbH. Instrument for the automatic determination of North direction. 4,461,089, Cl. 33-324.000.
Krohling, Erich; and Kremer, Manfred, to Still GmbH. Drive system and method for automotive vehicles, especially floor vehicles such as forklift trucks. 4,461,958, Cl. 290-45.000.
Krusche, Alfred, to Linde Aktiengesellschaft. Hydrostatic drive systems. 4,461,148, Cl. 60-421.000.
Ku, Han S.: *See*—
Pyne, William J.; Ku, Han S.; and Holm, Robert E., 4,461,899, Cl. 546-203.000.
Kubo, Kazunori: *See*—
Yamamoto, Minoru; Tanigawa, Koichiro; Kubo, Kazunori; and Takakura, Masazumi, 4,461,976, Cl. 315-100.000.
Kucharski, Kazimierz: *See*—
Mitka, Boleslaw; Prajsnar, Tadeusz; Mniszek, Karol; Gorecki, Wilhelm; Kolodziejczyk, Franciszek E.; Madry, Jan; Kielpinski, Ryszard; Gorecki, Boguslaw; Kucharski, Kazimierz; Richta, Edmund; and Maciejewski, Jan, 4,461,419, Cl. 228-5.100.
Kuge, Toshio: *See*—
Yokoyama, Hiroshi; Kuge, Toshio; Nogita, Shunsuke; and Nakamura, Yoichi, 4,461,627, Cl. 44-23.000.
Kuhlow, Jurgen; and Sohrt, Christian, to Siemens Aktiengesellschaft. Electric rail propulsion unit. 4,461,218, Cl. 105-137.000.
Kunsman, Donald R., to Victaulic Company of America. Coupling members for pipeline assemblies. 4,461,498, Cl. 285-16.000.

Kunzel, Ulrich: *See*—
Hinkel, Holger; Kaus, Gerhard; Kraus, Georg; Kunzel, Ulrich; and Muehl, Reinhold, 4,461,237, Cl. 118-50.100.
Kuperstein, Michael, to Massachusetts Institute of Technology. Microelectrode and assembly for parallel recording of neurol groups. 4,461,304, Cl. 128-642.000.
Kurakake, Mitsuo, to Fanuc Ltd. Loading system in numerical controller. 4,462,086, Cl. 364-900.000.
Kuramoto, Atsuo: *See*—
Nakasato, Yukiya; Kuramoto, Atsuo; Morishita, Sadao; and Hiraishi, Shigetoshi, 4,461,495, Cl. 346-211.000.
Kuroda, Akira: *See*—
Nakamura, Tsutomu; Kuroda, Akira; Onishi, Masatoshi; and Sasaki, Tetsuo, 4,461,852, Cl. 521-121.000.
Kuroda, Takayuki: *See*—
Itakura, Gen; and Kuroda, Takayuki, 4,461,844, Cl. 501-137.000.
Kurz, Otto: *See*—
Schneider, Franz; Bergmann, Ewald; Kurz, Otto; and Dommer, Hans-Martin, 4,461,068, Cl. 29-568.000.
Kusaka, Satoshi, to Sony Corporation. Pickup assembly for disc player. 4,462,096, Cl. 369-45.000.
Kusakabe, Hiromi; and Yoshida, Yoshihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Current mirror circuit. 4,462,005, Cl. 330-288.000.
Kutowy, Oleh: *See*—
Thayer, William L.; Bennett, Adam J.; Kutowy, Oleh; and Sourirajan, Srinivasa, 4,461,707, Cl. 210-321.100.
Kuwayama, Shigeo: *See*—
Harada, Yuho; and Kuwayama, Shigeo, 4,461,841, Cl. 501-37.000.
Kuzyk, Roman; and Zupko, William P. Method and apparatus for processing and drying photographic disc film. 4,461,555, Cl. 354-299.000.
Kwon, Tae M., to Litton Systems, Inc. Nuclear magnetic resonance cell having improved temperature sensitivity and method for manufacturing same. 4,461,996, Cl. 324-315.000.
Kyburz, Emilio: *See*—
Aschwanden, Werner; and Kyburz, Emilio, 4,461,906, Cl. 548-406.000.
Kyle, James C. Hermetically sealed insulating assembly. 4,461,926, Cl. 174-152.0GM.
Kyowa Carbon Co., Ltd.: *See*—
Ikeda, Shigeru; Hori, Shozi; Eguchi, Kiyohisa; Matsuo, Kanji; Zaima, Hidenori; Gamada, Yoshifumi; and Kondo, Teruhisa, 4,461,806, Cl. 428-408.000.
Kyytsonen, Juhani: *See*—
Hakulinen, Risto; Salkinoja-Salonen, Miria; Rasanen, Jorma; and Kyytsonen, Juhani, 4,461,708, Cl. 210-605.000.
L. & C. Steinmuller GmbH: *See*—
Michelfelder, Sigfrid; and Voos, Helmut, 4,461,224, Cl. 110-345.000.
L. Schuler GmbH: *See*—
Schneider, Franz; Bergmann, Ewald; Kurz, Otto; and Dommer, Hans-Martin, 4,461,068, Cl. 29-568.000.
Lab, Miroslav: *See*—
Janda, Jiri; Burdych, Jiri; Lab, Miroslav; and Dlabal, Pavel, 4,462,097, Cl. 369-248.000.
Lacks Industries, Inc.: *See*—
Bramer, Walter C., 4,461,190, Cl. 74-501.00M.
Lahtinen, Seppo, to A. Ahlstrom Osakeyhtio. Rotary feeder. 4,461,700, Cl. 209-136.000.
Lamparsky, Dietmar: *See*—
Kaiser, Roman; and Lamparsky, Dietmar, 4,461,309, Cl. 131-276.000.
Landt, Harvey L.; and Snider, Glenn R., to Rockwell International Corporation. Broadband filter and tuning system. 4,462,009, Cl. 333-17.00R.
Lang, Ludwig: *See*—
Nitzsche, Klaus; Lang, Ludwig; and Lang, Ortulf G., 4,461,053, Cl. 15-172.000.
Lang, Ortulf G.: *See*—
Nitzsche, Klaus; Lang, Ludwig; and Lang, Ortulf G., 4,461,053, Cl. 15-172.000.
Langauer, Theodor: *See*—
Abildt, Uwe; and Langauer, Theodor, 4,461,641, Cl. 71-93.000.
Langenbach, Manfred, to Maschinenfabrik Alfred Schmermund GmbH & Co. Device for intermittent application of glue. 4,461,236, Cl. 118-50.000.
Langland, Robert. Container and manual holder. 4,461,412, Cl. 224-273.000.
Langseth, Milfred A.: *See*—
Anderson, Dallas A.; and Grayden, Harlan J., 4,461,135, Cl. 52-827.000.
Laroche, Francois X. Structural members modules. 4,461,133, Cl. 52-730.000.
Larson, Gary A. Planting implement with end segments rearwardly pivotal to form quadrilateral structure. 4,461,356, Cl. 172-311.000.
Larsson, Peter; and Schaffer, Franz. Kachelofen. 4,461,272, Cl. 126-64.000.
Lashmore, David S., to United States of America, Commerce. Process and bath for electroplating nickel-chromium alloys. 4,461,680, Cl. 204-41.000.
Lauria, Gerard F. Valve box cover. 4,461,597, Cl. 404-25.000.
Lausch, Robert C., to Armstrong World Industries, Inc. Bow and skew resistant plain-weave polyolefin. 4,461,802, Cl. 428-229.000.
Lauterbach-Dammler, Inge: *See*—
Zollner, Dieter; Lauterbach-Dammler, Inge; Rittman, Friedrich; and Schieber, Franz, 4,462,104, Cl. 373-93.000.
Laval, Michel: *See*—
Allemand, Robert; Laval, Michel; and Parot, Pierre, 4,461,952, Cl. 250-370.000.
Laviano, Samuel. Press construction. 4,461,164, Cl. 72-455.000.
Lawrence Fell Limited: *See*—
Fell, Donald R.; and Takeuchi, Seiji, 4,461,402, Cl. 222-105.000.
Lawson, David A. Intermeshed and interleaved dynamic display units. 4,461,106, Cl. 40-505.000.
Lawson, Edmund J.; and Waterfield, Charles G., to Tioxide Group Plc. Production of vesiculated polymer beads. 4,461,848, Cl. 521-64.000.
Layton, Howard M.; and Fenton, William, to Interlab, Inc. Heat exchange assembly for ultra-pure water. 4,461,347, Cl. 165-133.000.
LDJ Electronics, Inc.: *See*—
Jackson, Leon D.; Morris, Dan O.; and Blohm, Alan J., 4,462,055, Cl. 360-118.000.
LeBaron, Steven M., to Bush Universal, Inc. Molded shanks. 4,461,101, Cl. 36-76.00C.
Lech, Thaddeus, Jr.; and Weage, Kenneth A., deceased (by Weage, Caroline J., legal representative), to Borg-Warner Corporation. Clutch driven plate assembly with multi-part hub. 4,461,376, Cl. 192-106.200.
Le Cover, Maurice, to Aikman, Leslie N. Tobacco smoke filters. 4,461,308, Cl. 131-198.00R.
Lederer, Edgar: *See*—
Lefrancier, Pierre; Parant, Monique; Audibert, Francoise; Sache, Edgar; Chedid, Louis; Choay, Jean; and Lederer, Edgar, 4,461,761, Cl. 424-177.000.
Lee, Andrew J.; Palmer, Thomas E.; and Mason, Dorris K., to Ebonite International, Inc. Bowling ball and method of manufacture. 4,461,478, Cl. 273-63.00R.
Lee, George E.: *See*—
Lee, Thomas B. K.; and Lee, George E., 4,461,728, Cl. 260-239.0BD.
Lee, Len F.: *See*—
Howe, Robert K.; and Lee, Len F., 4,461,642, Cl. 71-95.000.
Lee, Richard A., to United States of America, Army. Track pad reinforcement. 4,461,516, Cl. 305-38.000.
Lee, Thomas B. K.; and Lee, George E., to Hoechst Boussel Pharmaceuticals Inc. Preparation of 4-phenyl-1,3-benzodiazepins. 4,461,728, Cl. 260-239.0BD.
Lees, Roger T., to Eastman Kodak Company. Stabilizing a transducer output. 4,461,983, Cl. 315-383.000.
Lefrancier, Pierre; Parant, Monique; Audibert, Francoise; Sache, Edgar; Chedid, Louis; Choay, Jean; and Lederer, Edgar, to Agence Nationale de Valorisation de la Recherche (ANVAR). Oligomers of compounds of the muramyl-peptide type and medicaments containing them. 4,461,761, Cl. 424-177.000.
Legendre, Serge, to Essilor International Cie Generale d'Optique. Progressive ophthalmic lens. 4,461,550, Cl. 351-169.000.
Leggett & Platt, Incorporated: *See*—
Bustos, Rafael T., 4,461,388, Cl. 211-49.00D.
Legrand: *See*—
Durand, Guy; and Barriuso, Jean-Pierre, 4,461,528, Cl. 339-98.000.
Lehan, Frank W., to System Development Corporation. Signal processing system. 4,462,081, Cl. 364-554.000.
Lehmann, Richard W.: *See*—
Chowdhury, Ajit K.; Bauer, Gerald L.; and Lehmann, Richard W., 4,461,743, Cl. 422-129.000.
Lehmann, Werner; Maier, Sieghart; and Schwartz, Reinhard, to Robert Bosch GmbH. Device for fuel injection pumps. 4,461,256, Cl. 123-367.000.
Lehtinen, Jukka A., to Oy Tampella A.B. Method of continuous drying of a paper or other porous web and a drying device for applying this method. 4,461,095, Cl. 34-41.000.
Leland Stanford Jr. University, Board of Trustees of: *See*—
Shaw, Herbert J.; and Digonnet, Michel J. F., 4,461,536, Cl. 350-96.150.
Lemak, Nicholas S.: *See*—
Baldwin, David R.; and Lemak, Nicholas S., 4,462,110, Cl. 377-43.000.
Leonard, Eric M.; Geyer, Frederick F.; and Myers, George M., to Eastman Kodak Company. Optical disc assemblies for optical disc write/read apparatus. 4,462,036, Cl. 346-137.000.
Leribaux, Henri R., to Agence Spatiale Europeenne. Solid lithium nitride electrolyte battery comprising lithium alloy anode. 4,461,816, Cl. 429-191.000.
Les Cables de Lyon: *See*—
Bourget, Jean-Claude, 4,461,658, Cl. 148-127.000.
Leveque, Alain: *See*—
Sabot, Jean-Louis; and Leveque, Alain, 4,461,748, Cl. 423-10.000.
Lever, Louis. Differential winding air shaft. 4,461,430, Cl. 242-56.900.
Levine, Arnold M. Film sound track recording and playback system. 4,461,552, Cl. 352-27.000.
Levitt, George; and Zimmerman, William T., to Du Pont de Nemours, E. I., and Company. Herbicidal alkenyl sulfonamides. 4,461,640, Cl. 71-92.000.
Lewis, Harry T.; and Dillard, Ewell F., to Tennessee Valley Authority. Production of urea phosphate. 4,461,913, Cl. 564-063.000.
Lewis, Richard C.: *See*—
Thiele, Alfred W.; McLain, Robert E.; Martinez, Modesto T., Jr.; Lewis, Richard C.; and Kim, Michael S., 4,462,082, Cl. 364-571.000.
Lewison, Howard L., to Dynamics Corporation of America. Leaf spring shank assembly. 4,461,358, Cl. 172-705.000.

Lieberman, Seymour; Prasad, Veeramac V. K.; and Warne, Patricia A., to Columbia University. Polymeric reagents for the isolation and protection of carbonyl compounds. 4,461,876, Cl. 525-374.000.
Lindbloom, George G., to White Consolidated Industries, Inc. Suspended load rotating lifter. 4,461,505, Cl. 294-88.000.
Linde Aktiengesellschaft: *See*—
Krusche, Alfred, 4,461,148, Cl. 60-421.000.
Linde, Yosef, to Codex Corporation. Do loop circuit. 4,462,074, Cl. 364-200.000.
Lindley, William L. Ledge bed overlay. 4,461,047, Cl. 5-90.000.
Lindner, Christian; Ott, Karl-Heinz; Peters, Horst; Buekers, Josef; and Neuray, Dieter, to Bayer Aktiengesellschaft. Mixture of a thermoplastic polymer of an alkyl methacrylate and a graft polymer of methyl methacrylate onto crosslinked alkyl acrylate rubber. 4,461,868, Cl. 525-67.000.
Lindner, Friedrich; and Scheunemann, Kurt, to Deutsche Forschungs- und Versuchanstalt fur Luft- und Raumfahrt e.V. Method and apparatus for inoculating crystallization seeds into a liquid latent heat storage substance. 4,461,153, Cl. 62-3.000.
Lischner, David J.: *See*—
Celler, George K.; Lischner, David J.; and Robinson, McDonald, 4,461,670, Cl. 156-603.000.
Litton Industrial Products, Inc.: *See*—
MacDonald, Daniel J., 4,461,994, Cl. 324-174.000.
Papp, Alan M., 4,461,379, Cl. 198-472.000.
Litton Systems, Inc.: *See*—
Kwon, Tae M., 4,461,996, Cl. 324-315.000.
Liu, Donghwa, to ASQ Boats, Inc. Carrier for semiconductors. 4,461,617, Cl. 432-253.000.
Lloyd, William W., to Texas Instruments Incorporated. System and method for improving the multiplexing capability of a liquid crystal display and providing temperature compensation therefor. 4,462,027, Cl. 340-784.000.
Lockhart, Robert N.: *See*—
Barker, Anthony M.; and Lockhart, Robert N., 4,461,273, Cl. 126-77.000.
Lockheed Missiles & Space Company, Inc.: *See*—
Ward, Robert B., 4,462,011, Cl. 333-154.000.
Loffelman, Frank F.; and Brady, Thomas E., to American Cyanamid Company. Polymer compositions stabilized with triazinyl-piperidine compounds. 4,461,861, Cl. 524-100.000.
Lomedico, Philip R., to RI Consultants, Inc., a part interest. Batting accessory. 4,461,043, Cl. 2-21.000.
Long, Eric L.: *See*—
Bailey, James R.; and Long, Eric L., 4,461,539, Cl. 350-96.210.
L'Oreal: *See*—
Gueret, Jean-Louis H., 4,461,312, Cl. 132-88.700.
Lourenco, Antonio P.: *See*—
Mahrus, Duraid; and Lourenco, Antonio P., 4,461,585, Cl. 384-288.000.
Lowe, Colin F. Sheet metal beam. 4,461,134, Cl. 52-732.000.
Loy, Nicholas J., to Hoffmann-La Roche Inc. High-speed capacitive weighing method and apparatus. 4,461,363, Cl. 177-1.000.
Loyvet, Andre G.; and Morgan, Dennis J., to Hoover Treated Wood Products, Inc. Fire-retardant treatment composition. 4,461,720, Cl. 252-607.000.
Lu, Sun; and Chung, David B., to Minnesota Mining and Manufacturing Company. Thermally addressed cholesteric-smectic liquid crystal device and composition. 4,461,715, Cl. 252-299.100.
Lucas, Charles D. Apparatus and method for burning wood. 4,461,275, Cl. 126-286.000.
Lucht, Hartmut; and Wendt, Reiner. Spectrafluorometer arrangement. 4,461,573, Cl. 356-318.000.
Ludlow, Peter J.: *See*—
Knepper, Ronald W.; Ludlow, Peter J.; and Petrosky, Joseph A., Jr., 4,462,091, Cl. 365-200.000.
Ludwig, Willis J., to Minnesota Mining and Manufacturing Company. Soap having improved carbonless imaging properties. 4,461,496, Cl. 346-210.000.
Lukienko, Viktor G.: *See*—
Sirotin, Jury G.; Nikolaev, Stanislav V.; Gelfand, Lazar M.; Romanov, Pavel D.; Potapov, Valentin D.; Alexeev, Mikhail S.; Volkov, Evgeny A.; Yalevsky, Vladlen D.; Lukienko, Viktor G.; Popov, Anatoly G.; and Tupikov, Grigory A., 4,461,512, Cl. 299-42.000.
Lum, Francis; Graham, Bruce; Irwin, Samuel N.; and Velazquez, Juan F., to Irwin International, Inc. Method for controlling a disc head. 4,462,053, Cl. 360-78.000.
Lummus Crest Inc.: *See*—
Albano, John V.; and Friedman, George, 4,461,751, Cl. 423-372.000.
Lundberg, Robert D.: *See*—
Peiffer, Dennis G.; Lundberg, Robert D.; and Turner, S. Richard, 4,461,884, Cl. 526-240.000.
Luoma, Robert P., II; and Roxlo, Helen E., to Du Pont de Nemours, E. I., and Company. Method of monitoring the temperature of a sterile docking cutting means. 4,461,951, Cl. 219-497.000.
M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft: *See*—
Petersen, Godber, 4,461,464, Cl. 270-47.000.
Ma, Kenneth M.: *See*—
Phillipps, Patrick G.; and Ma, Kenneth M., 4,461,302, Cl. 128-630.000.
Maag Gear-Wheel & Machine Company Limited: *See*—
Wuest, Ulrich, 4,461,125, Cl. 51-165.880.
Maass, William D., to B. F. Goodrich Company, The. Railroad crossing structure. 4,461,421, Cl. 238-8.000.
MacAvoy, David W.: *See*—
Gallusser, David O.; MacAvoy, David W.; Punako, Stephen; and Frear, David L., 4,461,526, Cl. 339-89.00M.
MacDonald, Daniel J., to Litton Industrial Products, Inc. Permanent magnet inductor tachometer. 4,461,994, Cl. 324-174.000.
Maciejewski, Jan: *See*—
Mitka, Boleslaw; Prajsnar, Tadeusz; Mniszek, Karol; Gorecki, Wilhelm; Kolodziejczyk, Franciszek E.; Madry, Jan; Kielpinski, Ryszard; Gorecki, Boguslaw; Kucharski, Kazimierz; Richta, Edmund; and Maciejewski, Jan, 4,461,419, Cl. 228-5.100.
Maco Meudon: *See*—
Emonet, Henri, 4,461,204, Cl. 91-55.000.
Macosko, Robert L. Water modulator. 4,461,319, Cl. 137-624.120.
MacPhee, John; Gasparrini, C. Robert; and Wirth, David, to Baldwin-Gegenheimer Corporation. Wedge shaped ink agitator for printing presses. 4,461,210, Cl. 101-363.000.
Madill, H. Dinsmore: *See*—
Gandhi, Shri K.; and Madill, H. Dinsmore, 4,461,184, Cl. 73-863.230.
Madry, Jan: *See*—
Mitka, Boleslaw; Prajsnar, Tadeusz; Mniszek, Karol; Gorecki, Wilhelm; Kolodziejczyk, Franciszek E.; Madry, Jan; Kielpinski, Ryszard; Gorecki, Boguslaw; Kucharski, Kazimierz; Richta, Edmund; and Maciejewski, Jan, 4,461,419, Cl. 228-5.100.
Maeda, Hiroaki: *See*—
Sugano, Nobuhiko; Iizuka, Chiyokichi; and Maeda, Hiroaki, 4,461,760, Cl. 424-177.000.
Maeda, Tetsuro; Yoshii, Yasuo; Okamoto, Akihiro; and Nishinakagawa, Isamu, to Denki Kagaku Kogyo Kabushiki Kaisha. ABS Resin composition. 4,461,865, Cl. 524-440.000.
Magee, Philip S., to Chevron Research Company. Pesticidal phosphoryl- and phosphinyl-thioalkyl cyclic sufones. 4,461,764, Cl. 424-202.000.
Magerlein, Barney J.; and Whaley, Howard A., to Upjohn Company, The. Antibiotic nodusmicin derivatives. 4,461,903, Cl. 548-188.000.
Magin, Rudolf; Nenninger, Franz; and Engert, Gerd-Juergen, to BASF Aktiengesellschaft. Process and arrangements for charging a tubular reactor with granular solids. 4,461,327, Cl. 141-1.000.
Magnetic Peripherals Inc.: *See*—
Chen, Di, 4,462,095, Cl. 369-44.000.
Mahlab, David: *See*—
Yogev, Amnon; and Mahlab, David, 4,461,276, Cl. 126-415.000.
Mahrus, Duraid; and Lourenco, Antonio P., to Metal Leve S.A. Sleeve bearing composed of halfshells having different eccentricities. 4,461,585, Cl. 384-288.000.
Maier, Sieghart: *See*—
Lehmann, Werner; Maier, Sieghart; and Schwartz, Reinhard, 4,461,256, Cl. 123-367.000.
Majkrzak, David S., to Steiger Tractor Inc. Method and apparatus of starting a cold engine. 4,461,249, Cl. 123-142.50E.
Malinow, M. R., to Medical Research Foundation of Oregon. Synthetic compounds to inhibit intestinal absorption of cholesterol in the treatment of hypercholesterolemia. 4,461,762, Cl. 424-182.000.
Mall, Hans-Georg: *See*—
Jung, Werner; and Mall, Hans-Georg, 4,462,038, Cl. 346-163.000.
Mallas, Angelos. Wrist pin for reciprocating engines. 4,461,595, Cl. 403-154.000.
Mallick, George T., Jr.: *See*—
Maynard, Pamela M.; and Mallick, George T., Jr., 4,461,986, Cl. 318-778.000.
Manabe, Masatoshi; Naohara, Jun; and Miyoshi, Hideaki, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Method for the treatment of waste fluids from orange canneries and process for recovering pectic substance therefrom. 4,461,890, Cl. 536-2.000.
Mandi, Attila: *See*—
Hermecz, Istvan; Meszaros, Zoltan; Breining, Tibor; Virag, Sandor; Vasvari nee Debreczy, Lelle; Horvath, Agnes; Nagy, Gabor; Mandi, Attila; Szucs, Tamas; Bitter, Istvan; and Sebestyen, Gyula, 4,461,769, Cl. 424-251.000.
Manello, Jeannette S.: *See*—
Rogers, Howard G.; Gaudiana, Russell A.; Manello, Jeannette S.; and Sahatjian, Ronald A., 4,461,886, Cl. 528-331.000.
Rogers, Howard G.; Gaudiana, Russell A.; Manello, Jeannette S.; and Sahatjian, Ronald A., 4,461,887, Cl. 528-345.000.
Rogers, Howard G.; Gaudiana, Russell A.; Manello, Jeannette S.; and Sahatjian, Ronald A., 4,461,888, Cl. 528-363.000.
Mannesmann Tally Corporation: *See*—
Whitaker, C. Gordon; and Safford, James H., 4,461,984, Cl. 318-687.000.
Mannhart, Felix, to F. Mannhart AG. Method and apparatus for removing yarn remnants from a bobbin. 4,461,060, Cl. 28-295.000.
Manville Service Corporation: *See*—
Shadwick, Jan, 4,462,068, Cl. 362-332.000.
Marabini, Anna M.: *See*—
Rinelli, Giorgio; and Marabini, Anna M., 4,461,701, Cl. 209-166.000.
Marathon Oil Company: *See*—
Falk, David O., 4,461,351, Cl. 166-295.000.
Falk, David O., 4,461,352, Cl. 166-295.000.
Marcatili, Enrique A. J., to Bell Telephone Laboratories, Incorporated. Wavelength filters. 4,461,535, Cl. 350-96.140.
Marecki, Paul E.; and Weaver, John M., to SDS Biotech Corporation. Additives for improving ruminant feed utilization. 4,461,772, Cl. 424-269.000.
Marine Resources Company, The: *See*—
Hilbertz, Wolf H., 4,461,684, Cl. 204-132.000.

Martel, Alain: *See—*
Menard, Marcel; and Martel, Alain, 4,461,727, Cl. 260-239.00A.

Martin, Joel L.: *See—*
Welch, M. Bruce; Dietz, Richard E.; Capshew, Charles E.; and Martin, Joel L., 4,461,882, Cl. 526-119.000.

Martin, Marcus C.: *See—*
Gantz, James L.; and Martin, Marcus C., 4,461,050, Cl. 15-3.000.

Martin, Philippe. Radar signal processing process and circuit. 4,462,032, Cl. 343-5.0CM.

Martinez, Modesto T., Jr.: *See—*
Thiele, Alfred W.; McLain, Robert E.; Martinez, Modesto T., Jr.; Lewis, Richard C.; and Kim, Michael S., 4,462,082, Cl. 364-571.000.

Martinez, Rosendo. Exercise device beneficial to the metatarsol arch. 4,461,472, Cl. 272-96.000.

Maruzen Sewing Machine Co., Ltd.: *See—*
Yoneda, Yoshihide, 4,461,228, Cl. 112-259.000.

Marx, Hans-Norbert: *See—*
Goettsche, Reimer; and Marx, Hans-Norbert, 4,461,721, Cl. 252-607.000.

Masaki, Saburou, to Hiroyashi Iizuka. Method and an apparatus for producing moisturized hot air. 4,461,223, Cl. 110-215.000.

Mascher, Werner; and Pampuch, Klaus. Respirator. 4,461,291, Cl. 128-202.260.

Maschinenfabrik Alfred Schmermund GmbH & Co.: *See—*
Langenbach, Manfred, 4,461,236, Cl. 118-50.000.

Mascioli, Alessandro, to General Moped Co., Inc. Lightweight storage battery. 4,461,812, Cl. 429-29.000.

Mason, Dorris K.: *See—*
Lee, Andrew J.; Palmer, Thomas E.; and Mason, Dorris K., 4,461,478, Cl. 273-63.00R.

Massachusetts Institute of Technology: *See—*
Kuperstein, Michael, 4,461,304, Cl. 128-642.000.

Massol, Jean-Jacques; and Sainte-Foi, Daniel. Heat resistant glass fiber composition. 4,461,840, Cl. 501-36.000.

Masui, Yukiharu: *See—*
Minami, Chojiro; and Masui, Yukiharu, 4,461,507, Cl. 296-76.000.

Mathews, John H.; DeLucia, Mary L.; and Mattina, Charles F., to Kimberly-Clark Corporation. Method and smoking article wrapper for reducing sidestream smoke. 4,461,311, Cl. 131-365.000.

Matson, James A.; Myllymaki, Robert W.; Doyle, Terrence W.; and Bush, James A., to Bristol-Myers Company. Antitumor agents albacarcins V and M. 4,461,831, Cl. 435-119.000.

Matsubara, Toshiya: *See—*
Oda, Yoshio; Morimoto, Takeshi; and Matsubara, Toshiya, 4,461,682, Cl. 204-98.000.

Matsuda, Eugene: *See—*
Huey, Wai; Murman, Fernando; and Matsuda, Eugene, 4,461,448, Cl. 251-1.00B.

Matsuda, Kazuo: *See—*
Satoh, Yoshio; Ohashi, Makoto; Miyashita, Tsutomu; Matsuda, Kazuo; and Komenou, Kazunari, 4,462,087, Cl. 365-36.000.

Matsuda, Masaoki: *See—*
Tahara, Susumu; Fujii, Kozo; Nishihira, Keigo; Matsuda, Masaoki; and Mizutare, Katsuhiko, 4,461,909, Cl. 560-193.000.

Matsui, Koichi: *See—*
Tanikawa, Kowji; Matsui, Koichi; Kimura, Tetsuya; Takamatsu, Takeshi, deceased; and Takamatsu, Tokuyuki, legal representative, 4,461,558, Cl. 354-416.000.

Matsui, Masao; Okamoto, Kazuo; and Osagawa, Takao, to Kanebo, Ltd.; and Kanebo Synthetic Fibers Ltd. Fur-like article having pile with difference in color or fineness. 4,461,791, Cl. 428-15.000.

Matsukura, Satoru: *See—*
Nagata, Osamu; Matsukura, Satoru; Yamada, Hajime; and Sasaki, Yozo, 4,461,142, Cl. 60-39.020.

Matsumoto, Sotosuke, to Eagle Industry Co., Ltd. Stern tube seal. 4,461,487, Cl. 277-74.000.

Matsuo, Kanji: *See—*
Ikeda, Shigeru; Hori, Shozi; Eguchi, Kiyohisa; Matsuo, Kanji; Zaima, Hidenori; Gamada, Yoshifumi; and Kondo, Teruhisa, 4,461,806, Cl. 428-408.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Fujimoto, Makoto; Ohta, Yoshio; and Chikamura, Takao, 4,462,047, Cl. 358-212.000.
Ishimura, Yohzoh, 4,461,940, Cl. 219-10.55C.
Itakura, Gen; and Kuroda, Takayuki, 4,461,844, Cl. 501-137.000.
Kawabuchi, Masami; Satoh, Junichi; Muramatsu, Fumio; and Saitoh, Koetsu, 4,462,092, Cl. 367-105.000.
Watanabe, Shuichi; Katakabe, Noboru; and Sasaki, Toshiharu, 4,461,588, Cl. 400-144.200.

Matsushita Electric Works, Ltd.: *See—*
Kobayashi, Masato; Fukuzono, Hideki; and Nishimura, Hiromi, 4,462,057, Cl. 361-2.000.
Yamamoto, Minoru; Tanigawa, Koichiro; Kubo, Kazunori; and Takakura, Masazumi, 4,461,976, Cl. 315-100.000.

Matsushita, Yukio: *See—*
Nonaka, Kimihiro; and Matsushita, Yukio, 4,461,260, Cl. 123-478.000.

Matsuyama, Kiyoshi: *See—*
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; and Suzuki, Takatoshi, 4,461,881, Cl. 526-118.000.

Mattedi, Bruno A.: *See—*
Neumann, Leopold; Shapiro, Gerald N.; and Mattedi, Bruno A., 4,462,029, Cl. 340-825.500.

Matthews, Robert B.; Taylor, Peter J.; and Dallimore, Keith J., to Plessey Overseas Limited. Jet pump. 4,461,678, Cl. 204-9.000.

Mattina, Charles F.: *See—*
Mathews, John H.; DeLucia, Mary L.; and Mattina, Charles F., 4,461,311, Cl. 131-365.000.

Maxwell Laboratories, Inc.: *See—*
Korn, Peter, 4,461,389, Cl. 215-246.000.

May, Dean W., to J. I. Case Company. Pressure protection system. 4,461,315, Cl. 137-255.000.

May, E. Glenn, to Harris Corporation. Miniature resistive temperature detector and method of fabrication. 4,462,020, Cl. 338-25.000.

May, Karl: *See—*
Knieper, Josef; Printz, Heinz; and May, Karl, 4,461,722, Cl. 252-628.000.

Mayer, Herbert E., to Censor Patent- und Versuches-Anstalt. Method of and apparatus for the positioning of disk-shaped workpieces, particularly semiconductor wafers. 4,461,567, Cl. 355-41.000.

Maynard, Pamela M.; and Mallick, George T., Jr., to Westinghouse Electric Corp. Motor control apparatus with phase related detector. 4,461,986, Cl. 318-778.000.

Mazzola, Massimo: *See—*
Carignani, Giancarlo; Cipriani, Aldo; and Mazzola, Massimo, 4,461,850, Cl. 521-91.000.

McCall, Patrick P.: *See—*
Bock, Jan; McCall, Patrick P.; Robbins, Max L.; and Siskin, Michael, 4,461,696, Cl. 208-11.0LE.

McCallum, Henry, to Statiflo, Inc. Motionless mixer combination. 4,461,579, Cl. 366-337.000.

McDonnell Douglas Corporation: *See—*
Token, Kenneth H.; and Garner, Edward C., 4,461,343, Cl. 165-104.260.

McFarland, James D., Jr., to Edelbrock Corp. Broad torque band producing intake manifold for an internal combustion engine. 4,461,248, Cl. 123-52.00M.

McGarry, Charles N.; Stunis, Janet; and Wehrenberg, Thomas M., to Corning Glass Works. Processes for preparing novel baddeleyite refractory articles. 4,461,843, Cl. 501-102.000.

McGhee, James B., to Teledyne Industries, Inc. Frame type electrical connector for leadless integrated circuit packages. 4,461,524, Cl. 339-75.0MP.

McGraw-Edison Company: *See—*
Boni, Richard R., 4,461,937, Cl. 200-82.00B.

McKee, Charles B.; McKee, Duane B.; and Wainwright, H. Kent, to In-Situ, Inc. Well monitoring, controlling and data reducing system. 4,461,172, Cl. 73-155.000.

McKee, Duane B.: *See—*
McKee, Charles B.; McKee, Duane B.; and Wainwright, H. Kent, 4,461,172, Cl. 73-155.000.

McLain, Robert E.: *See—*
Thiele, Alfred W.; McLain, Robert E.; Martinez, Modesto T., Jr.; Lewis, Richard C.; and Kim, Michael S., 4,462,082, Cl. 364-571.000.

McMahon, Donald H., to Sperry Corporation. Electro optic switch. 4,461,543, Cl. 350-383.000.

McMichael, John C.: *See—*
Brinton, Charles C.; and McMichael, John C., 4,461,838, Cl. 436-511.000.

McNeilab, Inc.: *See—*
Stanley, Kerry G.; and Ho, Winston, 4,461,775, Cl. 424-311.000.

McNicol, Melvin A.: *See—*
Binet, Rejean; Cribb, William E.; Edmonds, Anthony C. F.; and McNicol, Melvin A., 4,461,660, Cl. 149-2.000.

McPeak, Garold L.: *See—*
Fritel, Raymond; and McPeak, Garold L., 4,461,490, Cl. 280-763.100.

McQuay-Norris, Inc.: *See—*
Weissing, Otto; and Hill, Don C., 4,461,067, Cl. 29-564.100.

Meaders, Michael W.: *See—*
Vinzant, Michael B.; Speegle, Steven C.; Meaders, Michael W.; and Hilts, Robert L., 4,461,353, Cl. 166-322.000.

Mechem, Raymond W. Variable height concrete truck. 4,461,577, Cl. 366-55.000.

Medero, Richard: *See—*
Hood, Rush W., Jr.; and Medero, Richard, 4,461,266, Cl. 128-681.000.

Medical College of Georgia Research Inst.: *See—*
Hendry, Lawrence B.; Bransome, Edwin D., Jr.; Hutson, Marion S.; and Campbell, Lillian K., 4,461,619, Cl. 434-295.000.

Medical Research Foundation of Oregon: *See—*
Malinow, M. R., 4,461,762, Cl. 424-182.000.

Mehta, Avinash C., to Polaroid Corporation. Diffusion control layers in diffusion transfer photographic products. 4,461,824, Cl. 430-215.000.

Meidensha Electric Mfg. Co., Ltd.: *See—*
Itoh, Hiromichi; Hirose, Takashi; and Yamamoto, Akira, 4,461,817, Cl. 429-209.000.

Meier, Anton; and Troxler, Eduard, to Ciba-Geigy Corporation. Process for the preparation of novel light stabilizers. 4,461,898, Cl. 546-188.000.

Meiller, Hermann: *See—*
Grassl, Karl J.; and Meiller, Hermann, 4,461,444, Cl. 248-550.000.

Meitav, Azieh: *See—*
Peled, Emanuel; and Meitav, Azieh, 4,461,815, Cl. 429-105.000.

Melby, Phillip J. Electric body trim guard for automobiles. 4,461,503, Cl. 293-118.000.

Melillo, Louis; Haga, Tsutomu; and Sashida, Iwao, to Pioneer Speaker Components, Inc. Acoustic transducer with honeycomb diaphragm. 4,461,930, Cl. 179-110.00A.

Melzer, Harald; and Hahn, Joachim, to Bayerische Motoren Werke Aktiengesellschaft. Method for adjusting the valve control of a reciprocating piston internal combustion engine, especially of a diesel engine. 4,461,062, Cl. 29-156.70R.

Memorex Corporation: *See*—
Kendall, Larry J., 4,461,961, Cl. 307-261.000.

Menacci, Samuel A., to FMC Corporation. Method of sterilizing liquid food products. 4,461,780, Cl. 426-521.000.

Menard, Marcel; and Martel, Alain, to Bristol-Myers Company. 4-Acylthioazetidinone intermediates for antibacterial agents. 4,461,727, Cl. 260-239.00A.

Mendiratta, Ashok K.; and Morgan, Wayne F., to General Electric Company. Purification of bisphenol-A. 4,461,915, Cl. 568-724.000.

Merkel, Kurt E.: *See*—
Hershberger, Charles L.; Merkel, Kurt E.; Weeks, Robert E.; and Wild, Gene M., 4,461,723, Cl. 260-112.50R.

Mertz, Forrest H., to Mertz, Inc. Apparatus for splitting logs. 4,461,331, Cl. 144-193.00A.

Mertz, Inc.: *See*—
Mertz, Forrest H., 4,461,331, Cl. 144-193.00A.

Messina, Gene. Gyro stabilized flying saucer model. 4,461,436, Cl. 244-23.00C.

Meszaros, Zoltan: *See*—
Hermecz, Istvan; Meszaros, Zoltan; Breining, Tibor; Virag, Sandor; Vasvari nee Debreczy, Lelle; Horvath, Agnes; Nagy, Gabor; Mandi, Attila; Szucs, Tamas; Bitter, Istvan; and Sebestyen, Gyula, 4,461,769, Cl. 424-251.000.

Metal Leve S.A.: *See*—
Mahrus, Duraid; and Lourenco, Antonio P., 4,461,585, Cl. 384-288.000.

Mettler Instrumente AG: *See*—
Strickler, Ernst, 4,461,364, Cl. 177-255.000.

Metz, Kenneth W.; Rasbury, Vincent K.; and Reece, Jack E., to Minnesota Mining and Manufacturing Company. Spectral sensitization of photothermographic elements. 4,461,828, Cl. 430-592.000.

Michel, Philip L., to United Technologies Corporation. Helicopter rotor with blade trailing edge tabs responsive to control system loading. 4,461,611, Cl. 416-24.000.

Michelfelder, Sigfrid; and Voos, Helmut, to L. & C. Steinmuller GmbH. Method of minimizing the emission of contaminants from flame combustion. 4,461,224, Cl. 110-345.000.

Midland Manufacturing Corp.: *See*—
Portis, Ralph G., 4,461,397, Cl. 220-85.00P.

Miida, Takashi; Hika, Yoshihiko; and Takei, Akira, to Fujitsu Limited. Nonvolatile semiconductor memory device. 4,462,089, Cl. 365-185.000.

Miki, Hiroyuki, to Nissan Motor Co., Ltd. Seat belt assembly. 4,461,492, Cl. 280-806.000.

Mikoshiba, Shigeo; Shinada, Shinichi; and Shirai, Shoji, to Hitachi, Ltd. Method of driving gas discharge light-emitting devices. 4,461,978, Cl. 315-169.400.

Miles Laboratories, Inc.: *See*—
Greenquist, Alfred C., 4,461,829, Cl. 435-7.000.

Miller, Allen F.: *See*—
Astroth, Gary D.; and Miller, Allen F., 4,461,470, Cl. 272-17.000.

Miller, Chauncey S., to TRW Inc. Modem signal acquisition technique. 4,462,108, Cl. 375-97.000.

Miller, Ira: *See*—
Dotson, Robert N.; Davies, Robert B.; and Miller, Ira, 4,461,989, Cl. 323-222.000.

Miller, Jr., Warren H.; and Taylor, Wilson E., to Harris Corporation. Reference marker/correlation scheme for optical measurements. 4,461,575, Cl. 356-386.000.

Miller, Kenneth G., to Respiratory Care, Inc. Nebulizer system. 4,461,425, Cl. 239-338.000.

Mills, Carl R. Accumulator with piston-poppet seal assembly. 4,461,322, Cl. 138-31.000.

Mills, Charles J.; and Tracy, Steven E., to Boeing Company, The; and Aero-Go, Inc. Aircraft engine lifting and positioning apparatus. 4,461,455, Cl. 254-3.00R.

Minami, Chojiro; and Masui, Yukiharu, to Nissan Motor Co., Ltd. Edge garnish molding assembly. 4,461,507, Cl. 296-76.000.

Minato, Ichiro; Shibata, Koichi; and Furuoya, Itsuo, to Takeda Chemical Industries, Ltd. Epoxy resin hardening agents. 4,461,878, Cl. 525-504.000.

Minnesota Mining and Manufacturing Company: *See*—
Lu, Sun; and Chung, David B., 4,461,715, Cl. 252-299.100.
Ludwig, Willis J., 4,461,496, Cl. 346-210.000.
Metz, Kenneth W.; Rasbury, Vincent K.; and Reece, Jack E., 4,461,828, Cl. 430-592.000.
Wirt, David F., 4,461,735, Cl. 261-104.000.

Minolta Camera Kabushiki Kaisha: *See*—
Ikenoue, Yoshikazu, 4,461,564, Cl. 355-8.000.
Kimura, Kazuo, 4,461,557, Cl. 354-402.000.
Ueda, Hiroshi; and Oyokota, Shigeru, 4,462,013, Cl. 335-229.000.

Minor, Ira L.; and Noey, Barbara A. Driver's heel protector. 4,461,100, Cl. 36-72.00B.

Misaka, Eiichi: *See*—
Terada, Atsusuke; Naruto, Shunji; and Misaka, Eiichi, 4,461,912, Cl. 562-468.000.

Misumi, Teruo: *See*—
Nakagawa, Katsumi; Komatsu, Toshiyuki; Hirai, Yutaka; Misumi, Teruo; and Fukuda, Tadaji, 4,461,819, Cl. 430-59.000.

Mitchell, David C. Protein compounds. 4,461,725, Cl. 260-112.50R.

Mitchell, Maurice E. Educational entertainment device comprising cubes formed of four ⅛th octahedron sections rotatably coupled to a tetrahedron. 4,461,480, Cl. 273-153.00S.

Mitchell, Michael D. Golf club having weighted handle. 4,461,479, Cl. 273-81.00A.

Mitka, Bolesław; Prajsnar, Tadeusz; Mniszek, Karol; Gorecki, Wilhelm; Kolodziejczyk, Franciszek E.; Madry, Jan; Kielpinski, Ryszard; Gorecki, Boguslaw; Kucharski, Kazimierz; Richta, Edmund; and Maciejewski, Jan, to Instytut Metalurgii Zelaza IM. Stanislawa Staszica. Auxiliary apparatus for manufacturing strips and sheets, coated on one side with a protective coating. 4,461,419, Cl. 228-5.100.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Betsudan, Shinichi; Aoki, Katsuhiko; Sato, Shigeru; and Katagi, Takashi, 4,462,034, Cl. 343-761.000.
Saikatsu, Takeo; Anzai, Yoshinori; Kajiwara, Toshiro; Kobayashi, Goroku; and Morimoto, Shunichi, 4,461,981, Cl. 315-246.000.

Mitsubishi Gas Chemcail, Co., Inc.: *See*—
Nakasato, Yukiya; Kuramoto, Atsuo; Morishita, Sadao; and Hiraishi, Shigetoshi, 4,461,495, Cl. 346-211.000.

Mitsubishi Paper Mills, Ltd.: *See*—
Nakasato, Yukiya; Kuramoto, Atsuo; Morishita, Sadao; and Hiraishi, Shigetoshi, 4,461,495, Cl. 346-211.000.
Suzuki, Shigeyoshi; Uchida, Koji; Yamada, Jun; and Senga, Takao, 4,461,818, Cl. 430-49.000.

Mitsui Petrochemical Industries, Ltd.: *See*—
Shiomi, Teiichi; and Kishimura, Kotaro, 4,461,809, Cl. 428-482.000.

Mix, Konrad; and Feess, Erich, to Cassella Aktiengesellschaft. Dyestuffs of the phthalocyanine series, their preparation and their use on cellulose. 4,461,622, Cl. 8-661.000.

Miyai, Masahiko: *See*—
Hoshino, Yoshiyuki; Imazu, Shyuichi; Miyai, Masahiko; Oshima, Yoshikuni; and Izumiya, Masakiyo, 4,461,346, Cl. 165-114.000.

Miyashita, Tsutomu: *See*—
Satoh, Yoshio; Ohashi, Makoto; Miyashita, Tsutomu; Matsuda, Kazuo; and Komenou, Kazunari, 4,462,087, Cl. 365-36.000.

Miyazawa, Susumu: *See*—
Fukuda, Norisuke; and Miyazawa, Susumu, 4,461,941, Cl. 219-10.55B.

Miyoshi, Hideaki: *See*—
Manabe, Masatoshi; Naohara, Jun; and Miyoshi, Hideaki, 4,461,890, Cl. 536-2.000.

Mizuguchi, Ryuzo: *See*—
Kanda, Kazunori; Ishii, Keizou; Kida, Katsuaki; Ishikura, Shinichi; and Mizuguchi, Ryuzo, 4,461,870, Cl. 525-123.000.

Mizushima, Nobuyuki; Murata, Kyohei; Tamaki, Hiroshi; Hayashi, Junichi; and Ohkubo, Fujio, to Nippon Steel Corporation. Apparatus for cooling steel pipe. 4,461,462, Cl. 266-117.000.

Mizutare, Katsuhiko: *See*—
Tahara, Susumu; Fujii, Kozo; Nishihira, Keigo; Matsuda, Masaoki; and Mizutare, Katsuhiko, 4,461,909, Cl. 560-193.000.

Mniszek, Karol: *See*—
Mitka, Bolesław; Prajsnar, Tadeusz; Mniszek, Karol; Gorecki, Wilhelm; Kolodziejczyk, Franciszek E.; Madry, Jan; Kielpinski, Ryszard; Gorecki, Boguslaw; Kucharski, Kazimierz; Richta, Edmund; and Maciejewski, Jan, 4,461,419, Cl. 228-5.100.

Mobil Oil Corporation: *See*—
Bowden, Edgar A.; and Prior, Maurice J., 4,462,094, Cl. 367-188.000.
Dessau, Ralph M.; and Kerr, George T., 4,461,845, Cl. 502-27.000.
Hunt, William C., III, 4,461,350, Cl. 166-272.000.
Young, Lewis B., 4,461,729, Cl. 260-459.00R.
Young, Lewis B., 4,461,730, Cl. 260-459.00R.

Mohr, James W., to Outboard Marine Corporation. Outboard motor with selectively operable drainage system. 4,461,250, Cl. 123-198.00R.

Moiroux, August; and Bouvier, Maurice, to Airmachines; and Poclain Hydraulics. Hydraulic pump with variable-stroke piston and generator using said pump. 4,461,613, Cl. 417-285.000.

Molex Incorporated: *See*—
Raymer, Jack D., II; Sampson, Stephen A.; and Crane, Burke J., 4,461,537, Cl. 350-96.200.

Mollison, Alistair N., to Du Pont Canada Inc. Films from nylon blends having a moisture content of 0.75 to 2.25 weight percent. 4,461,808, Cl. 428-475.800.

Momiyama, Kikuo: *See*—
Murakami, Hiroyasu; Uchiyama, Takashi; Suzuki, Ryoichi; Kawamura, Masaharu; Sakai, Shinji; and Momiyama, Kikuo, 4,462,025, Cl. 340-753.000.

Mommsen, Gordon V., to Graco Inc. Air turbine drive for electrostatic spray gun. 4,462,061, Cl. 361-227.000.

Monsanto Company: *See*—
Howe, Robert K.; and Lee, Len F., 4,461,642, Cl. 71-95.000.
Singh, Rajendra K., 4,461,639, Cl. 71-86.000.

Monsanto Europe S.A.: *See*—
Cobb, Alec S.; and Williams, David J., 4,461,897, Cl. 544-135.000.

Montagu, Jean I., to General Scanning Inc. Wide-angle actuator. 4,462,014, Cl. 335-230.000.

Montalbano, Anthony P. Cold weather breathing device with improved conduit and valve arrangement. 4,461,292, Cl. 128-204.170.

Montanwerke Walter GmbH: *See*—
Motzer, Willi; and Brauning, Horst, 4,461,121, Cl. 51-3.000.

Moore, Gary L., to Cardio-Pace Medical, Inc. Tool for sealing and attaching a lead to a body implantable device. 4,461,194, Cl. 81-436.000.

Moore, Robert E., to Sun Tech, Inc. Stable gas-carrying compositions. 4,461,717, Cl. 252-312.000.

Morgan, Dennis J.: *See*—
Loyvet, Andre G.; and Morgan, Dennis J., 4,461,720, Cl. 252-607.000.

Morgan, Wayne F.: *See*—
Mendiratta, Ashok K.; and Morgan, Wayne F., 4,461,915, Cl. 568-724.000.

Mori, Kei. Apparatus for collecting and transmitting solar energy. 4,461,278, Cl. 126-440.000.

Mori, Kinji; and Ihara, Hirokazu, to Hitachi, Ltd. Job processing method utilizing a plurality of information processing devices. 4,462,075, Cl. 364-200.000.

Mori, Koichi; and Nakao, Masafumi, to Asahi Kasei Kogyo Kabushiki Kaisha. Recording material. 4,461,807, Cl. 428-469.000.

Morikawa, Akira; and Narita, Yoshinori, to NGK Spark Plug Co., Ltd. Bent honeycomb pipe assembly with central pipe. 4,461,323, Cl. 138-115.000.

Morimoto, Shunichi: *See*—
Saikatsu, Takeo; Anzai, Yoshinori; Kajiwara, Toshiro; Kobayashi, Goroku; and Morimoto, Shunichi, 4,461,981, Cl. 315-246.000.

Morimoto, Takeshi: *See*—
Oda, Yoshio; Morimoto, Takeshi; and Matsubara, Toshiya, 4,461,682, Cl. 204-98.000.

Morimura, Yasuhiro: *See*—
Fukahori, Yoshihide; Morimura, Yasuhiro; Fujio, Ryota; and Fukuura, Yukio, 4,461,796, Cl. 428-116.000.

Morioka, Akitoshi: *See*—
Yoshino, Tsunemi; Iwata, Hiroshi; Kashihara, Toshitsugu; and Morioka, Akitoshi, 4,461,560, Cl. 354-475.000.

Morishita, Sadao: *See*—
Nakasato, Yukiya; Kuramoto, Atsuo; Morishita, Sadao; and Hiraishi, Shigetoshi, 4,461,495, Cl. 346-211.000.

Morishita, Satoru: *See*—
Itabashi, Keiji; Morishita, Satoru; and Hatotani, Hisashi, 4,461,631, Cl. 55-66.000.

Morris, Dan O.: *See*—
Jackson, Leon D.; Morris, Dan O.; and Blohm, Alan J., 4,462,055, Cl. 360-118.000.

Morrison, Charles F., Jr., to Vac-Tec Systems, Inc. Magnetically enhanced sputtering device having a plurality of magnetic field sources including improved plasma trapping device and method. 4,461,688, Cl. 204-192.00R.

Morrison, Donald R. Cooling system for hydraulic powered apparatus. 4,461,341, Cl. 165-51.000.

Morton, William P. Vapor phase activator pad for a self-contained fingerprinting kit. 4,461,235, Cl. 118-31.500.

Mostul, Thomas A. Scrubbing brush, rinse and sweeping equipment. 4,461,052, Cl. 15-29.000.

Motorola, Inc.: *See*—
D'Avello, Robert F.; and Sokola, Raymond L., 4,462,098, Cl. 370-50.000.
Dotson, Robert N.; Davies, Robert B.; and Miller, Ira, 4,461,989, Cl. 323-222.000.
Parker, Norman W., 4,462,114, Cl. 455-203.000.
Smith, Michael D., 4,461,991, Cl. 323-312.000.

Motoyama, Kazuyasu, to Olympus Optical Company Limited. Support for a rotational speed detecting mechanism on a flat motor. 4,461,967, Cl. 310-268.000.

Motsinger, Donald L.; and Brown, Daniel G., to PPG Industries, Inc. Aqueous sizing composition for glass fibers for use in producing a mat. 4,461,804, Cl. 428-288.000.

Motzer, Willi; and Brauning, Horst, to Montanwerke Walter GmbH. Program-controlled grinding machine, particularly for sharpening of rotatable cutting tools. 4,461,121, Cl. 51-3.000.

Mount, Houston B., II, to Standard Oil Company. Bit extension guide for sidewall corer. 4,461,360, Cl. 175-78.000.

Mounteer, Carlyle A.: *See*—
Yang, Maurice; and Mounteer, Carlyle A., 4,462,018, Cl. 338-3.000.

Muchow, John D.: *See*—
Cove, Harry R.; and Muchow, John D., 4,461,316, Cl. 137-312.000.

Mudder, Terrence I.; and Whitlock, James L., to Homestake Mining Company. Strain of *Pseudomonas paucimobilis*. 4,461,834, Cl. 435-253.000.

Muehl, Reinhold: *See*—
Hinkel, Holger; Kaus, Gerhard; Kraus, Georg; Kunzel, Ulrich; and Muehl, Reinhold, 4,461,237, Cl. 118-50.100.

Mufloletto, C. Verne; and Goodell, John B. Diffraction-limited achromatic beam expanding telescope. 4,461,546, Cl. 350-453.000.

Muller, Gunter, to ARENCO-BMD Maschinenfabrik GmbH. Molding installation for the production of bipartite boxless foundry molds. 4,461,337, Cl. 164-181.000.

Muller, Ludwig: *See*—
Roth, Gunter; Quittkat, Wolfram; Frank, Dieter; Muller, Ludwig; and Grassmann, Wilhelm, 4,461,645, Cl. 106-100.000.

Munday, Mark L., to Westinghouse Electric Corp. Electronic display apparatus using time multiplexed data and control signals. 4,462,026, Cl. 340-756.000.

Munna, Rocco M. Hydraulic leveler ramp. 4,461,456, Cl. 254-88.000.

Murakami, Hiroyasu; Uchiyama, Takashi; Suzuki, Ryoichi; Kawamura, Masaharu; Sakai, Shinji; and Momiyama, Kikuo, to Canon Kabushiki Kaisha. Indication device for camera. 4,462,025, Cl. 340-753.000.

Murakami, Yutaka: *See*—
Toge, Hiroaki; Esaka, Shinichi; Murakami, Yutaka; and Murao, Toshiaki, 4,461,348, Cl. 165-173.000.

Muramatsu, Fumio: *See*—
Kawabuchi, Masami; Satoh, Junichi; Muramatsu, Fumio; and Satoh, Koetsu, 4,462,092, Cl. 367-105.000.

Murao, Toshiaki: *See*—
Toge, Hiroaki; Esaka, Shinichi; Murakami, Yutaka; and Murao, Toshiaki, 4,461,348, Cl. 165-173.000.

Murase, Itaru; Saisu, Tadakatsu; and Hasegawa, Kinichi, to Nippon Oil & Fats Co., Ltd. Oil-in-water emulsion. 4,461,777, Cl. 426-330.600.

Murase, Masakazu, to Terumo Kabushiki Kaisha. Electronic clinical thermometer. 4,461,584, Cl. 374-188.000.

Murata, Kyohei: *See*—
Mizushima, Nobuyuki; Murata, Kyohei; Tamaki, Hiroshi; Hayashi, Junichi; and Ohkubo, Fujio, 4,461,462, Cl. 266-117.000.

Murayama, Koushou: *See*—
Tachibana, Eiichi; Murayama, Koushou; and Isumi, Kenzo, 4,461,663, Cl. 156-86.000.

Murman, Fernando: *See*—
Huey, Wai; Murman, Fernando; and Matsuda, Eugene, 4,461,448, Cl. 251-1.00B.

Murphey, Joseph R.: *See*—
Childs, Jerry D.; Brothers, Lance E.; and Murphey, Joseph R., 4,461,644, Cl. 106-76.000.

Musikas, Claude: *See*—
Fitoussi, Richard; Musikas, Claude; and Ranarivelo, Hubert, 4,461,747, Cl. 423-10.000.

Musser, Mary E., to Texas Instruments, Inc. Process for etching tapered vias in silicon dioxide. 4,461,672, Cl. 156-644.000.

Mutschler, Otto. Ink writing implement. 4,461,591, Cl. 401-258.000.

Myers, George M.: *See*—
Leonard, Eric M.; Geyer, Frederick F.; and Myers, George M., 4,462,036, Cl. 346-137.000.

Myers, H. Allen, to Sundstrand Corporation. Variable displacement hydraulic control with override. 4,461,147, Cl. 60-389.000.

Myllymaki, Robert W.: *See*—
Matson, James A.; Myllymaki, Robert W.; Doyle, Terrence W.; and Bush, James A., 4,461,831, Cl. 435-119.000.

Nadherny, Frank J.: *See*—
Harringer, Robert V.; Nadherny, Frank J.; and Rada, Robert O., 4,461,073, Cl. 29-741.000.

Nagata, Osamu; Matsukura, Satoru; Yamada, Hajime; and Sasaki, Yozo, to Kawasaki Jukogyo Kabushiki Kaisha. Method of recovery of excess gas energy of blast furnace gas. 4,461,142, Cl. 60-39.020.

Nagy, Gabor: *See*—
Hermecz, Istvan; Meszaros, Zoltan; Breining, Tibor; Virag, Sandor; Vasvari nee Debreczy, Lelle; Horvath, Agnes; Nagy, Gabor; Mandi, Attila; Szucs, Tamas; Bitter, Istvan; and Sebestyen, Gyula, 4,461,769, Cl. 424-251.000.

Naito, Yukio: *See*—
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; and Suzuki, Takatoshi, 4,461,881, Cl. 526-118.000.

Nakagawa, Katsumi; Komatsu, Toshiyuki; Hirai, Yutaka; Misumi, Teruo; and Fukuda, Tadaji, to Canon Kabushiki Kaisha. Image-forming member for electrophotography. 4,461,819, Cl. 430-59.000.

Nakamura, Hatsuo: *See*—
Kato, Tiharu; Nakamura, Hatsuo; Koguchi, Shigeo; Yonezawa, Toshio; and Abe, Toshihiro, 4,461,825, Cl. 430-273.000.

Nakamura, Masaya, to Namco Limited. Game machine having pop-up target. 4,461,475, Cl. 273-1.0GC.

Nakamura, Tetsuya: *See*—
Ito, Osamu; Hobo, Nobuhito; and Nakamura, Tetsuya, 4,462,079, Cl. 364-442.000.

Nakamura, Tsutomu; Kuroda, Akira; Onishi, Masatoshi; and Sasaki, Tetsuo, to Hodogaya Chemical Co., Ltd. Phenolic resin foam and process for producing the same. 4,461,852, Cl. 521-121.000.

Nakamura, Yoichi: *See*—
Yokoyama, Hiroshi; Kuge, Toshio; Nogita, Shunsuke; and Nakamura, Yoichi, 4,461,627, Cl. 44-23.000.

Nakano, Mitsuyoshi: *See*—
Kimura, Kaoru; and Nakano, Mitsuyoshi, 4,461,936, Cl. 200-61.410.

Nakano, Motoo: *See*—
Wada, Kunihiko; and Nakano, Motoo, 4,461,072, Cl. 29-571.000.

Nakao, Masafumi: *See*—
Mori, Koichi; and Nakao, Masafumi, 4,461,807, Cl. 428-469.000.

Nakasato, Yukiya; Kuramoto, Atsuo; Morishita, Sadao; and Hiraishi, Shigetoshi, to Mitsubishi Paper Mills, Ltd.; and Mitsubishi Gas Chemcail, Co., Inc. Pressure sensitive copying paper. 4,461,495, Cl. 346-211.000.

Namco Limited: *See*—
Nakamura, Masaya, 4,461,475, Cl. 273-1.0GC.

Naohara, Jun: *See*—
Manabe, Masatoshi; Naohara, Jun; and Miyoshi, Hideaki, 4,461,890, Cl. 536-2.000.

Narita, Yoshinori: *See*—
Morikawa, Akira; and Narita, Yoshinori, 4,461,323, Cl. 138-115.000.

Naruto, Shunji: *See*—
Terada, Atsusuke; Naruto, Shunji; and Misaka, Eiichi, 4,461,912, Cl. 562-468.000.

Nath, Prem: *See*—
Cannella, Vincent D.; Nath, Prem; and Shuman, Robert J., 4,461,239, Cl. 118-718.000.

National Distillers and Chemical Corporation: *See*—
Harris, James J.; Hostetler, Donald E.; and Achorn, G. Stanley, 4,461,846, Cl. 502-105.000.

National Research Development Corporation: *See*—
Dewar, Michael E.; Ackerley, Kenneth E.; and Carlson, Lawrence E., 4,461,085, Cl. 33-174.00L.
Kerridge, David H., 4,461,655, Cl. 148-15.500.

National Semiconductor Corporation: *See*—
Chin, Sing W., 4,461,965, Cl. 307-530.000.
NCR Corporation: *See*—
Bangs, Richard G.; and Thomas, Jacob E., 4,462,037, Cl. 346-140.00R.
Nearman, Gerald M., to Raytheon Company. Miniature gyroscope. 4,461,176, Cl. 73-504.000.
Negi, Virendra S.: *See*—
Tague, Steven A.; and Negi, Virendra S., 4,462,072, Cl. 364-200.000.
Nelson Research & Development Company: *See*—
Rajadhyaksha, Vithal J., 4,461,638, Cl. 71-27.000.
Nenninger, Franz: *See*—
Magin, Rudolf; Nenninger, Franz; and Engert, Gerd-Juergen, 4,461,327, Cl. 141-1.000.
Netzer, Yishay. Electromagnetic pick-off control handle. 4,462,015, Cl. 336-135.000.
Neubert, Peter: *See*—
Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Neubert, Peter, 4,461,763, Cl. 424-182.000.
Neumann, Leopold; Shapiro, Gerald N.; and Mattedi, Bruno A., to Analogic Corporation. Command bus. 4,462,029, Cl. 340-825.500.
Neuray, Dieter: *See*—
Lindner, Christian; Ott, Karl-Heinz; Peters, Horst; Buekers, Josef; and Neuray, Dieter, 4,461,868, Cl. 525-67.000.
Neuzil, Richard W.; and Chang, Chin-Hsiung, to UOP Inc. Desorption technique. 4,461,649, Cl. 127-46.100.
New Hermes Incorporated: *See*—
Nissman, Marvin J., 4,461,082, Cl. 33-25.00B.
New Product, Inc.: *See*—
Vadnais, Kenneth, 4,461,454, Cl. 251-350.000.
Newman, Rodney J.: *See*—
Klee, George; De Noma, George R.; Collier, Stephen L.; and Newman, Rodney J., 4,461,603, Cl. 408-115.00R.
NGK Spark Plug Co., Ltd.: *See*—
Morikawa, Akira; and Narita, Yoshinori, 4,461,323, Cl. 138-115.000.
Niagara Machine & Tool Works: *See*—
Jones, Clarence O., Jr.; and Vosteen, William E., 4,461,182, Cl. 73-862.530.
Nicholas, Paul P.: *See*—
Kroenke, William J.; and Nicholas, Paul P., 4,461,919, Cl. 570-224.000.
Niedermeyer, Karl O. Through flow sump pump. 4,461,614, Cl. 417-424.000.
Nielsen, Chris E.; and Conard, Donald D., to Nielsen, Chris E. Personal property alarm. 4,462,023, Cl. 340-571.000.
Nihon Sekiyu Hanbai Kabushiki Kaisha: *See*—
Tanaka, Hiroshige, 4,461,599, Cl. 405-210.000.
Nikishkin, Vladimir I.: *See*—
Dmitriev, Stanislav P.; Evseev, Anatoly K.; Ivanov, Andrei S.; Komorin, Leonid V.; Nikishkin, Vladimir I.; Nuzhny, Stanislav N.; Rex, Mikhail K.; Sviniin, Mikhail P.; and Fedotov, Mikhail T., 4,461,972, Cl. 313-420.000.
Nikolaev, Stanislav V.: *See*—
Sirotin, Jury G.; Nikolaev, Stanislav V.; Gelfand, Lazar M.; Romanov, Pavel D.; Potapov, Valentin D.; Alexeev, Mikhail S.; Volkov, Evgeny A.; Yalevsky, Vladlen D.; Lukienko, Viktor G.; Popov, Anatoly G.; and Tupikov, Grigory A., 4,461,512, Cl. 299-42.000.
Nilssen, Ole K. Protection circuit for series resonant electronic ballasts. 4,461,980, Cl. 315-225.000.
Nilsson, Per, to AB Welin. Releasing device for life boats and the like. 4,461,233, Cl. 114-378.000.
Nippon Electric Co., Ltd.: *See*—
Ishii, Daisuke, 4,462,030, Cl. 340-825.440.
Shirai, Tadao, 4,462,007, Cl. 331-96.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Hiyoshi, Teruo; Okamoto, Eisaku; Aoki, Eiichiro; Sugiura, Toshio; and Kozuki, Koichi, 4,461,199, Cl. 84-1.190.
Nippon Oil & Fats Co., Ltd.: *See*—
Murase, Itaru; Saisu, Tadakatsu; and Hasegawa, Kinichi, 4,461,777, Cl. 426-330.600.
Nippon Paint Co., Ltd.: *See*—
Kanda, Kazunori; Ishii, Keizou; Kida, Katsuaki; Ishikura, Shinichi; and Mizuguchi, Ryuzo, 4,461,870, Cl. 525-123.000.
Nippon Soken, Inc.: *See*—
Sato, Susumu; Hattori, Tadashi; Ueno, Yoshiki; and Taguchi, Takashi, 4,461,532, Cl. 350-1.600.
Nippon Steel Corporation: *See*—
Higuchi, Seizun; Kamada, Minoru; Tano, Kazuhiro; Fushino, Tetsuo; and Fujinaga, Minoru, 4,461,679, Cl. 204-27.000.
Mizushima, Nobuyuki; Murata, Kyohei; Tamaki, Hiroshi; Hayashi, Junichi; and Ohkubo, Fujio, 4,461,462, Cl. 266-117.000.
Nippon Thompson Company, Ltd.: *See*—
Tanaka, Kazuhiko, 4,461,518, Cl. 308-6.00C.
Nippon Zoki Pharmaceutical Co., Ltd.: *See*—
Konishi, Jin-emon, 4,461,724, Cl. 260-112.50R.
Nippondenso Co., Ltd.: *See*—
Isomura, Shigenori; Kondo, Toshio; Kaji, Yasumasa; and Kobayashi, Akio, 4,461,261, Cl. 123-489.000.
Ito, Osamu; Hobo, Nobuhito; and Nakamura, Tetsuya, 4,462,079, Cl. 364-442.000.
Suzuki, Yutaka; Tanaka, Taro; Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; and Haseda, Satoshi, 4,461,170, Cl. 73-119.00A.
Toge, Hiroaki; Esaka, Shinichi; Murakami, Yutaka; and Murao, Toshiaki, 4,461,348, Cl. 165-173.000.
Nishihira, Keigo: *See*—
Tahara, Susumu; Fujii, Kozo; Nishihira, Keigo; Matsuda, Masaoki; and Mizutare, Katsuhiko, 4,461,909, Cl. 560-193.000.
Nishikawa, Masahiko; Ishibashi, Hiroaki; and Furukawa, Hidenori, to Chisso Corporation. Process for preparing porous spherical cellulose particles. 4,461,892, Cl. 536-65.000.
Nishimura, Hiromi: *See*—
Kobayashi, Masato; Fukuzono, Hideki; and Nishimura, Hiromi, 4,462,057, Cl. 361-2.000.
Nishinakagawa, Isamu: *See*—
Maeda, Tetsuro; Yoshii, Yasuo; Okamoto, Akihiro; and Nishinakagawa, Isamu, 4,461,865, Cl. 524-440.000.
Nissan Motor Company, Ltd.: *See*—
Hayashi, Yoshimasa, 4,461,247, Cl. 123-41.790.
Hosaka, Akio; and Aono, Shigeo, 4,461,257, Cl. 123-419.000.
Miki, Hiroyuki, 4,461,492, Cl. 280-806.000.
Minami, Chojiro; and Masui, Yukiharu, 4,461,507, Cl. 296-76.000.
Yaotani, Kouichi; and Tashoh, Masao, 4,461,509, Cl. 296-214.000.
Nissman, Marvin J., to New Hermes Incorporated. Engraving machine. 4,461,082, Cl. 33-25.00B.
Nitsche, Detlev: *See*—
Rolff, Rolf; and Nitsche, Detlev, 4,461,690, Cl. 204-228.000.
Nitto Chemical Industry Co., Ltd.: *See*—
Sasaki, Yutaka; and Utsumi, Hiroshi, 4,461,752, Cl. 423-376.000.
Nitzsche, Klaus; Lang, Ludwig; and Lang, Ortulf G. Multiple part toothbrush having an exchangeable brush head. 4,461,053, Cl. 15-172.000.
Noda Shokukin Kogyo Co., Ltd.: *See*—
Sugano, Nobuhiko; Iizuka, Chiyokichi; and Maeda, Hiroaki, 4,461,760, Cl. 424-177.000.
Noey, Barbara A.: *See*—
Minor, Ira L.; and Noey, Barbara A., 4,461,100, Cl. 36-72.00B.
Nofer, Karl: *See*—
Sendel, Uwe; and Nofer, Karl, 4,461,394, Cl. 215-330.000.
Nogita, Shunsuke: *See*—
Yokoyama, Hiroshi; Kuge, Toshio; Nogita, Shunsuke; and Nakamura, Yoichi, 4,461,627, Cl. 44-23.000.
Nolde, Wolfgang: *See*—
Gottlieb, Detlef; and Nolde, Wolfgang, 4,462,000, Cl. 330-51.000.
Nomata, Mikio: *See*—
Tansei, Hikaru; Kajimoto, Katsuhiko; and Nomata, Mikio, 4,461,334, Cl. 152-209.00R.
Nonaka, Kimihiro; and Matsushita, Yukio, to Sanshin Kogyo Kabushiki Kaisha. Fuel injection system for two-cycle internal combustion engines. 4,461,260, Cl. 123-478.000.
Norkus, Hans; and Drespa, Gerd, to Willich GmbH & Co. Method of and device for solidifying rock in mine tunnels and the like. 4,461,600, Cl. 405-260.000.
Norman, Ray. Foldable peep sight. 4,461,087, Cl. 33-249.000.
Norris, John; and Selden, Otto C., to Allied Corporation. Self-reeling cassette driven by the motion of an inserted web. 4,461,554, Cl. 354-275.000.
Norris, Philip R., to Polaroid Corporation. Method of and apparatus for documenting and inspecting a cargo container. 4,462,045, Cl. 358-93.000.
Norson Industries, Inc.: *See*—
Bateson, Norman E., 4,461,219, Cl. 105-377.000.
North American Philips Consumer Electronics Corp.: *See*—
Puhak, Peter G., 4,461,971, Cl. 313-407.000.
North American Philips Corporation: *See*—
Ustin, George; and Soltis, Andrew P., 4,461,523, Cl. 339-41.000.
North, Howard L., Jr., to Becton Dickinson and Company. Control for sample volume metering apparatus. 4,461,181, Cl. 73-749.000.
Northern Leader, Inc.: *See*—
Black, Milton W., 4,461,242, Cl. 122-15.000.
Northern Telecom Limited: *See*—
Britt, Roger W., 4,461,929, Cl. 179-81.00B.
Norwich Eaton Pharmaceuticals, Inc.: *See*—
Portlock, David E., 4,461,896, Cl. 546-165.000.
NuJack Corporation: *See*—
Stanton, George E., 4,461,187, Cl. 74-41.000.
Nur, Benjamin: *See*—
Carmi, Mordechay; Nur, Benjamin; and Tesler, Tzipora, 4,461,140, Cl. 56-50.000.
Nuzhny, Stanislav N.: *See*—
Dmitriev, Stanislav P.; Evseev, Anatoly K.; Ivanov, Andrei S.; Komorin, Leonid V.; Nikishkin, Vladimir I.; Nuzhny, Stanislav N.; Rex, Mikhail K.; Sviniin, Mikhail P.; and Fedotov, Mikhail T., 4,461,972, Cl. 313-420.000.
Nylen, George C.: *See*—
Osterman, Harry F.; and Nylen, George C., 4,461,675, Cl. 203-24.000.
Obara, Nobuo, to Seiko Instruments & Electronics Ltd. Alarm electronic timepiece having a stepping motor. 4,461,583, Cl. 368-260.000.
OBE-Werk Ohnmacht & Baumgartner GmbH & Co. K.G.: *See*—
Drlik, Gunther, 4,461,548, Cl. 351-153.000.
Oberlander, Andreas: *See*—
Feldmann, Joachim; and Oberlander, Andreas, 4,461,371, Cl. 188-71.900.
O'Cheskey, Theodore H.; and Edwards, Hugh T., Jr., to United States Filter Fluid Systems Corporation. Filter leaf and method and apparatus for making same. 4,461,945, Cl. 219-121.0LC.
Ochs, Leonard A., to Self Regulation Systems, Inc. Self adjusting bio-feedback method and apparatus. 4,461,301, Cl. 128-630.000.

Oda, Yoshio; Morimoto, Takeshi; and Matsubara, Toshiya, to Asahi Glass Company Ltd. Ion exchange membrane cell and electrolytic process using thereof. 4,461,682, Cl. 204-98.000.
Oehlenschlager, Adam A.; and Einarsson, Baldvin, to AO-Engineering A/S. Cleaning device for cleaning the inner surface of a container. 4,461,054, Cl. 15-304.000.
Office National d'Etudes et de Recherches Aerospatiales (Par Abreviation O.N.E.R.A.): *See*—
Jamet, Jean, 4,461,842, Cl. 501-95.000.
Officine Gauding di P. Gaudino & C. S.a.s.: *See*—
Gaudino, Piero, 4,461,058, Cl. 19-258.000.
Officine Meccaniche Carbofuel S.p.A.: *See*—
Carpaneto, Giovanni, 4,461,243, Cl. 122-15.000.
Ogawa, Akira: *See*—
Yasuda, Yutaka; Hirata, Yasuo; and Ogawa, Akira, 4,462,101, Cl. 371-43.000.
Ogawa, Masaki, to Bridgestone Tire Company Limited. Marks for use in rubber articles. 4,461,795, Cl. 428-64.000.
Ogilvie, Kelvin K., to ens Bio Logicals Inc. Dimethylaminomethylenated anti-herpes compounds. 4,461,757, Cl. 424-085.000.
Ogishima, Tetsuo, to Honda Giken Kogyo Kabushiki Kaisha. Fairing assembly for motorcycles. 4,461,508, Cl. 296-78.100.
Ognanovich, Michael W.: *See*—
Anderson, Dallas A.; and Grayden, Harlan J., 4,461,135, Cl. 52-827.000.
Ohama, Sadao: *See*—
Takagishi, Yasushi; Ohsuga, Kiichiro; and Ohama, Sadao, 4,461,765, Cl. 424-229.000.
Ohashi, Makoto: *See*—
Satoh, Yoshio; Ohashi, Makoto; Miyashita, Tsutomu; Matsuda, Kazuo; and Komenou, Kazunari, 4,462,087, Cl. 365-36.000.
Ohkubo, Fujio: *See*—
Mizushima, Nobuyuki; Murata, Kyohei; Tamaki, Hiroshi; Hayashi, Junichi; and Ohkubo, Fujio, 4,461,462, Cl. 266-117.000.
Ohmer, Herve, to Schlumberger Technology Corp. Non-conductive logging sonde housing. 4,461,997, Cl. 324-338.000.
Ohsuga, Kiichiro: *See*—
Takagishi, Yasushi; Ohsuga, Kiichiro; and Ohama, Sadao, 4,461,765, Cl. 424-229.000.
Ohta, Yoshio: *See*—
Fujimoto, Makoto; Ohta, Yoshio; and Chikamura, Takao, 4,462,047, Cl. 358-212.000.
Okamoto, Akihiro: *See*—
Maeda, Tetsuro; Yoshii, Yasuo; Okamoto, Akihiro; and Nishinakagawa, Isamu, 4,461,865, Cl. 524-440.000.
Okamoto, Eisaku: *See*—
Hiyoshi, Teruo; Okamoto, Eisaku; Aoki, Eiichiro; Sugiura, Toshio; and Kozuki, Koichi, 4,461,199, Cl. 84-1.190.
Okamoto, Kazuo: *See*—
Matsui, Masao; Okamoto, Kazuo; and Osagawa, Takao, 4,461,791, Cl. 428-15.000.
Okazaki, Kenji, to Allied Corporation. Chromium and cobalt free nickel base superalloy powder. 4,461,741, Cl. 420-460.000.
Okubo, Shigeo, to Design Professionals Financial Corporation. Three-axis spherical gimbal mount. 4,461,463, Cl. 269-60.000.
Okuda, Takao: *See*—
Saji, Ikutaro; Yamazaki, Hiroshi; Aono, Shunji; Ichise, Katsuaki; and Okuda, Takao, 4,461,774, Cl. 424-273.00R.
Olin Corporation: *See*—
Butt, Sheldon H., 4,461,924, Cl. 174-52.0FP.
Pryor, Michael J., 4,461,685, Cl. 204-146.000.
Olin, John G., to Sierra Instruments, Inc. Multirange flowmeter. 4,461,173, Cl. 73-203.000.
Olson, Ronald E.; Windel, William H.; and Harrison, John M. Automatic dialing and alarm system. 4,461,927, Cl. 179-2.00A.
Olson, Winston O. Eviscerating and survival tool. 4,461,080, Cl. 30-144.000.
Olympus Optical Company, Ltd.: *See*—
Ikari, Kazuo; and Fujii, Toru, 4,461,547, Cl. 350-580.000.
Motoyama, Kazuyasu, 4,461,967, Cl. 310-268.000.
Tanikawa, Kowji; Matsui, Koichi; Kimura, Tetsuya; Takamatsu, Takeshi, deceased; and Takamatsu, Tokuyuki, legal representative, 4,461,558, Cl. 354-416.000.
Omodei-Sale, Amedeo; and Toia, Emilio, to Gruppo Lepetit S.p.A. Naphth[1,2-d]imidazoles. 4,461,894, Cl. 544-370.000.
Onishi, Heizo, to Brother Kogyo Kabushiki Kaisha. Ultrasonic welding apparatus. 4,461,662, Cl. 156-73.400.
Onishi, Masatoshi: *See*—
Nakamura, Tsutomu; Kuroda, Akira; Onishi, Masatoshi; and Sasaki, Tetsuo, 4,461,852, Cl. 521-121.000.
Ono Pharmaceutical Co., Ltd.: *See*—
Iizuka, Kinji; Kamijo, Tetsuhide; Yamamoto, Ryoji; and Harada, Hiromu, 4,461,905, Cl. 548-341.000.
Ormat Turbines Ltd.: *See*—
Yogev, Amnon; and Mahlab, David, 4,461,276, Cl. 126-415.000.
Ortiz, Ernest A.: *See*—
Ciaffone, John T.; and Ortiz, Ernest A., 4,461,079, Cl. 30-79.000.
Osagawa, Takao: *See*—
Matsui, Masao; Okamoto, Kazuo; and Osagawa, Takao, 4,461,791, Cl. 428-15.000.
Osaki, Hichiro; and Hayashi, Kazumi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Concealed type head lamp device. 4,461,975, Cl. 315-82.000.
Oshima, Yoshikuni: *See*—
Hoshino, Yoshiyuki; Imazu, Shyuichi; Miyai, Masahiko; Oshima, Yoshikuni; and Izumiya, Masakiyo, 4,461,346, Cl. 165-114.000.
Osterman, Harry F.; and Nylen, George C., to Allied Corporation. Energy efficient process for vaporizing a liquid and condensing the vapors thereof. 4,461,675, Cl. 203-24.000.
Ostler, Earl W., to Agri-Systems. Animal monitoring apparatus. 4,461,240, Cl. 119-51.00R.
Ostler, Earl W., to Agri-Systems. Automatic animal monitoring apparatus. 4,461,241, Cl. 119-51.00R.
Oswald, Joseph A., Jr., to Du Pont de Nemours, E. I., and Company. Process for electrical terminal contact metallization. 4,461,785, Cl. 427-45.100.
Otis Engineering Corporation: *See*—
Vinzant, Michael B.; Speegle, Steven C.; Meaders, Michael W.; and Hilts, Robert L., 4,461,353, Cl. 166-322.000.
Otisca Industries, Ltd.: *See*—
Smith, Clay D.; and Keller, Douglas V., Jr., 4,461,625, Cl. 44-10.00R.
Ott, Karl-Heinz: *See*—
Lindner, Christian; Ott, Karl-Heinz; Peters, Horst; Buekers, Josef; and Neuray, Dieter, 4,461,868, Cl. 525-67.000.
Otterbein, Roy T., to Arvin Industries, Inc. Capillary fin media. 4,461,733, Cl. 261-153.000.
Ouchi, Teruo; and Chikashige, Kiyoshi, to Kabushiki Kaisha Medos Kenkyusho. Mechanism for direction changing of endoscope top end. 4,461,282, Cl. 128-4.000.
Ouhadi, Trazollah: *See*—
Feyssie, Philippe; Jeome, Robert; Ouhadi, Trazollah; and Fayt, Roger, 4,461,874, Cl. 525-271.000.
Outboard Marine Corporation: *See*—
Mohr, James W., 4,461,250, Cl. 123-198.00R.
Oy Tampella A.B.: *See*—
Lehtinen, Jukka A., 4,461,095, Cl. 34-41.000.
Oyaba, Takashi, to Pioneer Electronic Corporation. Ribbon type speaker and method of assembling magnetic circuit thereof. 4,461,932, Cl. 179-115.00V.
Oyokota, Shigeru: *See*—
Ueda, Hiroshi; and Oyokota, Shigeru, 4,462,013, Cl. 335-229.000.
Ozawa, Tamotsu, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for removing scale from nuclear fuel rods. 4,461,650, Cl. 134-1.000.
P.A. Rentrop, Hubbert & Wagner Fahrzeugausstattungen: *See*—
Berneking, Hans-Jurgen; and Rabe, Wilhelm, 4,461,511, Cl. 297-355.000.
Padalka, Valentin G.: *See*—
Gavrilov, Alexei G.; Galitskaya, Galina K.; Zhed, Viktor P.; Sinelschikov, Andrei K.; Padalka, Valentin G.; Boyarunas, Albert M.; Panin, Vyacheslav N.; and Barinov, Vitaly N., 4,461,799, Cl. 428-210.000.
Palamara, Eugene G., to PPG Industries, Inc. Method of preparing bushing tips. 4,461,191, Cl. 76-107.00S.
Palau, Joseph; and Froment, Jean-Paul, to S.A. des Etablissements Staubli. Electromagnetic device for controlling dobbies and other weaving systems. 4,461,325, Cl. 139-68.000.
Palmer, Thomas E.: *See*—
Lee, Andrew J.; Palmer, Thomas E.; and Mason, Dorris K., 4,461,478, Cl. 273-63.00R.
Pampuch, Klaus: *See*—
Mascher, Werner; and Pampuch, Klaus, 4,461,291, Cl. 128-202.260.
Pandrol Limited: *See*—
Harkus, Lance, 4,461,422, Cl. 238-366.000.
Panin, Vyacheslav N.: *See*—
Gavrilov, Alexei G.; Galitskaya, Galina K.; Zhed, Viktor P.; Sinelschikov, Andrei K.; Padalka, Valentin G.; Boyarunas, Albert M.; Panin, Vyacheslav N.; and Barinov, Vitaly N., 4,461,799, Cl. 428-210.000.
Pano Cap (Canada) Limited: *See*—
Sendel, Uwe; and Nofer, Karl, 4,461,394, Cl. 215-330.000.
Papp, Alan M., to Litton Industrial Products, Inc. Pallet conveyor. 4,461,379, Cl. 198-472.000.
Paraflux Limited: *See*—
Hore, Donald L., 4,461,092, Cl. 33-474.000.
Parant, Monique: *See*—
Lefrancier, Pierre; Parant, Monique; Audibert, Francoise; Sache, Edgar; Chedid, Louis; Choay, Jean; and Lederer, Edgar, 4,461,761, Cl. 424-177.000.
Pardo, Jorge. Thermal energy transfer device. 4,461,277, Cl. 126-419.000.
Park, SeJung: *See*—
Giuliani, Sylvester W.; and Park, SeJung, 4,462,088, Cl. 365-105.000.
Parker, Norman W., to Motorola, Inc. Signum signal generator. 4,462,114, Cl. 455-203.000.
Parkhurst, Beverly S. Cosmetic bag. 4,461,332, Cl. 150-34.000.
Parlak, Edward A.: *See*—
Hundal, Rolv; Kessinger, Boyd A.; and Parlak, Edward A., 4,461,317, Cl. 137-565.000.
Parot, Pierre: *See*—
Allemand, Robert; Laval, Michel; and Parot, Pierre, 4,461,952, Cl. 250-370.000.
Patent-Treuhand Gesellschaft fur elektrische Gluhlampen mbH: *See*—
Fahnrich, Hans-Jurgen, 4,461,982, Cl. 315-290.000.
Patrick, James H. Multiple seed planter with seed discharge mechanism. 4,461,225, Cl. 111-95.000.
Patterson, Paul L.: *See*—
Gatten, Ronald A.; and Patterson, Paul L., 4,461,166, Cl. 73-27.00R.

Patton, DeLane D., to Columbus Auto Parts Company. Prevailing torque adjusting element and method and apparatus for the construction thereof. 4,461,063, Cl. 29-175.00R.

Pauze, Denis R., to General Electric Company. Blended polyesterimide-polyesteramide-imide electrical coating compositions. 4,461,786, Cl. 427-120.000.

Pedersen, Karsten: *See*—
Brannstrom, Lars; and Pedersen, Karsten, 4,461,186, Cl. 73-864.620.

Peiffer, Dennis G.; Lundberg, Robert D.; and Turner, S. Richard, to Exxon Research and Engineering Co. Intramolecular polymeric complexes-viscosifiers for acid, base and salt (aqueous) solutions. 4,461,884, Cl. 526-240.000.

Peled, Emanuel; and Meitav, Azieh, to Ramot University Authority For Applied Research and Industrial Development Ltd. Ca Electrochemical cell. 4,461,815, Cl. 429-105.000.

Pellerin Milnor Corporation: *See*—
Pellerin, Norvin L., 4,461,959, Cl. 307-141.000.

Pellerin, Norvin L., to Pellerin Milnor Corporation. Control system for a laundry processing machine. 4,461,959, Cl. 307-141.000.

Pena Productions, Inc.: *See*—
Harrow, Nettie P., 4,461,411, Cl. 224-208.000.

Penne, Roger A., to Standard Oil Company (Indiana). Pressure sensitive carbonless copying systems. 4,461,494, Cl. 346-211.000.

Pentek Corporation: *See*—
Hoover, Alan A.; and Harris, Richard D., 4,461,382, Cl. 198-781.000.

Perez, Pedro; and Perez, Pedro, Jr. Tennis ball retriever and carrier. 4,461,504, Cl. 294-19.00A.

Perez, Pedro, Jr.: *See*—
Perez, Pedro; and Perez, Pedro, Jr., 4,461,504, Cl. 294-19.00A.

Peter, Emmett B., III; and Rayfield, Wilson P., to Burroughs Corporation. Automatic apparatus for lifting and separating sheet items from the surface of an electrophotographic drum. 4,461,468, Cl. 271-308.000.

Peters, Alan R., to Automation International Corp. Method of making extruded food products. 4,461,779, Cl. 426-516.000.

Peters, Bernardus G. Frequency response equalizing network for an electrostatic loudspeaker. 4,461,931, Cl. 179-111.00R.

Peters, Edward N.: *See*—
Fox, Daniel W.; Peters, Edward N.; and Smith, Gary F., 4,461,877, Cl. 525-439.000.

Peters, Horst: *See*—
Lindner, Christian; Ott, Karl-Heinz; Peters, Horst; Buekers, Josef; and Neuray, Dieter, 4,461,868, Cl. 525-67.000.

Petersen, Godber, to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft. Sheet, or stacked sheet handling apparatus. 4,461,464, Cl. 270-47.000.

Peterson, James R. Method of making ventilation apparatus. 4,461,066, Cl. 29-455.00R.

Peterson, Richard L.; Johnson, James A.; Scheurer, Roger J.; and Steinberg, Richard W., to Hiniker Company. Cultivator row unit with ridger/bedder implement. 4,461,355, Cl. 172-156.000.

Petrocarbon Developments Limited: *See*—
Duckett, Melvyn; Ashton, Gregory J.; and Salisbury, David R., 4,461,634, Cl. 62-11.000.

Petrosky, Joseph A., Jr.: *See*—
Knepper, Ronald W.; Ludlow, Peter J.; and Petrosky, Joseph A., Jr., 4,462,091, Cl. 365-200.000.

Pfaff Industriemaschinen GmbH: *See*—
Angele, Eugen; and Drechsel, Ludwig, 4,461,229, Cl. 112-291.000.

Pfalzgraf, Manfred; and Probst, Kurt, to VDO Adolf Schindling AG. Device for controlling the position of an element which controls the fuel-air mixture. 4,461,254, Cl. 123-350.000.

Phillipps, Patrick G.; and Ma, Kenneth M., to American Home Products Corporation. Coupling of multiple physiological signals across an isolation barrier. 4,461,302, Cl. 128-630.000.

Phillips, Leslie N., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Resin composite reinforced with fibers having a flat-sided triangular shape. 4,461,855, Cl. 523-222.000.

Phillips Petroleum Company: *See*—
Bailey, Fay W.; and Whitte, William M., 4,461,873, Cl. 525-240.000.
Casperson, John R., 4,461,623, Cl. 23-314.000.
Hanson, Donald O., 4,461,889, Cl. 528-498.000.
Thorn, Frank H., deceased, 4,461,749, Cl. 423-228.000.
Vives, Van C., 4,461,860, Cl. 524-80.000.
Voss, Raymond G., 4,461,737, Cl. 264-142.000.
Welch, M. Bruce; Dietz, Richard E.; Capshew, Charles E.; and Martin, Joel L., 4,461,882, Cl. 526-119.000.

Philpot, Van B., Jr. Serum fibrinogen viscosity in clinical medicine. 4,461,830, Cl. 435-13.000.

Photon Chroma, Inc.: *See*—
Plumadore, John D., 4,461,561, Cl. 355-3.00R.
Plumadore, John D., 4,461,566, Cl. 355-45.000.

Pierpoint, William; and Weeks, Dan M., to United States of America, Navy. Single zone lighting controller. 4,461,977, Cl. 315-159.000.

Piezo Electric Products, Inc.: *See*—
Kolm, Eric A.; and Kolm, Henry H., 4,461,968, Cl. 310-332.000.

Pioneer Electronic Corporation: *See*—
Oyaba, Takashi, 4,461,932, Cl. 179-115.00V.

Pioneer Speaker Components, Inc.: *See*—
Melillo, Louis; Haga, Tsutomu; and Sashida, Iwao, 4,461,930, Cl. 179-110.00A.

Piscitelli, R. Amelia: *See*—
Brush, Robert W., Sr.; and Piscitelli, R. Amelia, 4,461,530, Cl. 339-258.00R.

Pitney Bowes Inc.: *See*—
Schottle, Helmut A. M., 4,461,587, Cl. 400-131.000.

Plessey Overseas Limited: *See*—
Matthews, Robert B.; Taylor, Peter J.; and Dallimore, Keith J., 4,461,678, Cl. 204-9.000.

Plourde, R. Gilles. Diaphragm cover for a stethoscope. 4,461,368, Cl. 181-131.000.

Plumadore, John D., to Photon Chroma, Inc. Apparatus for imaging and developing electrophotographic microformats. 4,461,561, Cl. 355-3.00R.

Plumadore, John D., to Photon Chroma, Inc. Desk-top camera/processor-reader apparatus for electrophotographic film. 4,461,566, Cl. 355-45.000.

Plummer, Walter A., III. Method of shielding plural ribbon cables from radio frequency interference. 4,461,076, Cl. 29-825.000.

Plunkett, Alan B., to General Electric Company. Apparatus for controlling an electrical vehicle drive system. 4,461,988, Cl. 318-802.000.

Poclain Hydraulics: *See*—
Moiroux, August; and Bouvier, Maurice, 4,461,613, Cl. 417-285.000.

Podmoskovny Nauchno-Issledovatelsky I Proektnokonstruktorsky Ugolny Institut: *See*—
Sirotin, Jury G.; Nikolaev, Stanislav V.; Gelfand, Lazar M.; Romanov, Pavel D.; Potapov, Valentin D.; Alexeev, Mikhail S.; Volkov, Evgeny A.; Yalevsky, Vladlen D.; Lukienko, Viktor G.; Popov, Anatoly G.; and Tupikov, Grigory A., 4,461,512, Cl. 299-42.000.

Pohn, Johann: *See*—
Hofmann, Eberhard; Schneider, Gottfried; and Pohn, Johann, 4,461,141, Cl. 57-408.000.

Polaroid Corporation: *See*—
Douglas, Lawrence M., 4,461,556, Cl. 354-303.000.
Mehta, Avinash C., 4,461,824, Cl. 430-215.000.
Norris, Philip R., 4,462,045, Cl. 358-93.000.
Rogers, Howard G.; Gaudiana, Russell A.; Manello, Jeannette S.; and Sahatjian, Ronald A., 4,461,886, Cl. 528-331.000.
Rogers, Howard G.; Gaudiana, Russell A.; Manello, Jeannette S.; and Sahatjian, Ronald A., 4,461,887, Cl. 528-345.000.
Rogers, Howard G.; Gaudiana, Russell A.; Manello, Jeannette S.; and Sahatjian, Ronald A., 4,461,888, Cl. 528-363.000.

Poleshuk, Michael, to Xerox Corporation. Photolithographic process for fabricating thin film transistors. 4,461,071, Cl. 29-571.000.

Polinsky, Samual M.: *See*—
Bierman, Laurence W.; and Polinsky, Samual M., 4,461,746, Cl. 423-8.000.

Pollution Controls Industries, Inc.: *See*—
Herd, William H., Jr.; and Curtis, Stanley F., 4,461,731, Cl. 261-18.00B.

Pook, Peter D.; and Girsch, Charles W., to Team Winsor. Apparatus for controlling and storing a kite. 4,461,438, Cl. 244-153.00R.

Popov, Anatoly G.: *See*—
Sirotin, Jury G.; Nikolaev, Stanislav V.; Gelfand, Lazar M.; Romanov, Pavel D.; Potapov, Valentin D.; Alexeev, Mikhail S.; Volkov, Evgeny A.; Yalevsky, Vladlen D.; Lukienko, Viktor G.; Popov, Anatoly G.; and Tupikov, Grigory A., 4,461,512, Cl. 299-42.000.

Portis, Ralph G., to Midland Manufacturing Corp. Protective device for mobile tanks having bottom discontinuities. 4,461,397, Cl. 220-85.00P.

Portlock, David E., to Norwich Eaton Pharmaceuticals, Inc. 1-[Acylthio) and (mercapto)-1-oxoalkyl]-1,2,3,4-tetrahydroquinoline-2-carboxylic acids. 4,461,896, Cl. 546-165.000.

Potapov, Valentin D.: *See*—
Sirotin, Jury G.; Nikolaev, Stanislav V.; Gelfand, Lazar M.; Romanov, Pavel D.; Potapov, Valentin D.; Alexeev, Mikhail S.; Volkov, Evgeny A.; Yalevsky, Vladlen D.; Lukienko, Viktor G.; Popov, Anatoly G.; and Tupikov, Grigory A., 4,461,512, Cl. 299-42.000.

Potoski, John R.; Schiehser, Guy A.; and Strike, Donald P., to American Home Products Corporation. Pyridyl containing 1,2-benzisothiazole-3-amine derivatives. 4,461,901, Cl. 546-270.000.

Poulin, Charlemagne. Low effort digging and lifting tool. 4,461,458, Cl. 254-131.500.

Pound, Joseph H., to American Fly Ash Company. Slurry system for wasting fly ash having nonleachable, self-sustaining end product. 4,461,601, Cl. 406-109.000.

Povlick, Timothy R., to International Business Machines Corporation. Method and apparatus for checking the parity of disassociated bit groups. 4,462,102, Cl. 371-49.000.

PPG Industries, Inc.: *See*—
Girgis, Mikhail M., 4,461,859, Cl. 524-62.000.
Gwynette, Greswold; and Cordaro, Robert S., 4,461,315, Cl. 301-63.0PW.
Motsinger, Donald L.; and Brown, Daniel G., 4,461,804, Cl. 428-288.000.
Palamara, Eugene G., 4,461,191, Cl. 76-107.00S.
Raetzsch, Carl W., Jr., 4,461,692, Cl. 204-268.000.

Prahs, Harald, to Colgate-Palmolive Company. Striping dispenser. 4,461,403, Cl. 222-129.000.

Prajsnar, Tadeusz: *See*—
Mitka, Boleslaw; Prajsnar, Tadeusz; Mnitzek, Karol; Gorecki, Wilhelm; Kolodziejczyk, Franciszek E.; Madry, Jan; Kielpinski,

Ryszard; Gorecki, Boguslaw; Kucharski, Kazimierz; Richta, Edmund; and Maciejewski, Jan, 4,461,419, Cl. 228-5.100.
Prasad, Veeramac V. K.: *See*—
Lieberman, Seymour; Prasad, Veeramac V. K.; and Warne, Patricia A., 4,461,876, Cl. 525-374.000.
Pratt, William J.; and King, Robert E., to Dresser Industries, Inc. Drive axle assembly. 4,461,373, Cl. 192-4.00A.
Prescott, Roger, to Great Lakes Carbon Corporation. Apparatus for the stabilization of fibers. 4,461,159, Cl. 68-5.00D.
Presnell, Mark A., to AAR Corporation. Panel interconnection system. 4,461,131, Cl. 52-395.000.
Prest, Robert E., III: *See*—
Buras, Allen M.; and Prest, Robert E., III, 4,461,354, Cl. 166-343.000.
Printz, Heinz: *See*—
Knieper, Josef; Printz, Heinz; and May, Karl, 4,461,722, Cl. 252-628.000.
Prior, Maurice J.: *See*—
Bowden, Edgar A.; and Prior, Maurice J., 4,462,094, Cl. 367-188.000.
Probst, Kurt: *See*—
Pfalzgraf, Manfred; and Probst, Kurt, 4,461,254, Cl. 123-350.000.
Procter & Gamble Company, The: *See*—
Robbins, Medford D.; and Rodriguez, Sheila S., 4,461,782, Cl. 426-549.000.
Proform, Inc.: *See*—
Berg, Robin L., 4,461,232, Cl. 114-201.00R.
Pryor, Michael J., to Olin Corporation. Method for producing acicular iron or iron alloy particles. 4,461,685, Cl. 204-146.000.
Puhak, Peter G., to North American Philips Consumer Electronics Corp. Strengthening means for a CRT multi-opening mask framing member. 4,461,971, Cl. 313-407.000.
Punako, Stephen: *See*—
Davis, Alan L.; and Punako, Stephen, 4,461,531, Cl. 339-258.00R.
Gallusser, David O.; MacAvoy, David W.; Punako, Stephen; and Frear, David L., 4,461,526, Cl. 339-89.00M.
Pupp, Herwig, to Tetra Pak International AB. Packing material for aseptic packages. 4,461,667, Cl. 156-244.110.
Pyne, William J.; Ku, Han S.; and Holm, Robert E., to Diamond Shamrock Chemicals Company. Fluorenecarboxylic acid derivatives. 4,461,899, Cl. 546-203.000.
Quachita Machine Works, Inc.: *See*—
Hudson, Doyle R.; and Dulaney, Jimmie O., 4,461,136, Cl. 53-399.000.
Quick-Mount Manufacturing Co., Inc.: *See*—
Grashow, Joseph; Berg, Melvin J.; Dubovy, Joseph L.; and Grashow, Stanley J., 4,462,033, Cl. 343-715.000.
Quittkat, Wolfram: *See*—
Roth, Gunter; Quittkat, Wolfram; Frank, Dieter; Muller, Ludwig; and Grassmann, Wilhelm, 4,461,645, Cl. 106-100.000.
Raabe, Gerhard: *See*—
Ewaldt, Helmut; Raabe, Gerhard; Sauermann, Heinz; and Burmeister, Rainer, 4,462,019, Cl. 338-15.000.
Rabe, Wilhelm: *See*—
Berneking, Hans-Jurgen; and Rabe, Wilhelm, 4,461,511, Cl. 297-355.000.
Rada, Robert O.: *See*—
Harringer, Robert V.; Nadherny, Frank J.; and Rada, Robert O., 4,461,073, Cl. 29-741.000.
Raetzsch, Carl W., Jr., to PPG Industries, Inc. Electrolytic cell. 4,461,692, Cl. 204-268.000.
Rajadhyaksha, Vithal J., to Nelson Research & Development Company. Delivery of plant nutrients. 4,461,638, Cl. 71-27.000.
Ramot University Authority For Applied Research and Industrial Development Ltd.: *See*—
Peled, Emanuel; and Meitav, Azieh, 4,461,815, Cl. 429-105.000.
Rana, Mahendraainh D.; and Selines, Ronald J., to Union Carbide Corporation. High strength steel and gas storage cylinder manufactured thereof. 4,461,657, Cl. 148-36.000.
Ranarivelo, Hubert: *See*—
Fitoussi, Richard; Musikas, Claude; and Ranarivelo, Hubert, 4,461,747, Cl. 423-10.000.
Rasanen, Jorma: *See*—
Hakulinen, Risto; Salkinoja-Salonen, Miria; Rasanen, Jorma; and Kyytsonen, Juhani, 4,461,708, Cl. 210-605.000.
Rasbury, Vincent K.: *See*—
Metz, Kenneth W.; Rasbury, Vincent K.; and Reece, Jack E., 4,461,828, Cl. 430-592.000.
Rayburn, Charles C., to Illinois Tool Works Inc. Capacitive structure. 4,462,062, Cl. 361-323.000.
Rayfield, Wilson P.: *See*—
Peter, Emmett B., III; and Rayfield, Wilson P., 4,461,468, Cl. 271-308.000.
Raymer, Jack D., II; Sampson, Stephen A.; and Crane, Burke J., to Molex Incorporated. Fiber optic connector assembly. 4,461,537, Cl. 350-96.200.
Raytheon Company: *See*—
Nearman, Gerald M., 4,461,176, Cl. 73-504.000.
RCA Corporation: *See*—
Hacke, Joseph F.; Banks, Arthur J.; and Bazin, Lucas J., 4,461,962, Cl. 307-265.000.
Ross, Michael D., 4,462,048, Cl. 358-336.000.
Schade, Otto H., Jr., 4,462,002, Cl. 330-253.000.
Strolle, Christopher H., 4,462,024, Cl. 340-727.000.
Turner, Robert L.; and Jennings, Robert E., 4,461,386, Cl. 211-41.000.
Reece, Jack E.: *See*—
Metz, Kenneth W.; Rasbury, Vincent K.; and Reece, Jack E., 4,461,828, Cl. 430-592.000.
Reese, Donald M.; and Reese, Ida L., to Suspension Eyewear Enterprises. Line adjusting and locking device for eyeglasses. 4,461,549, Cl. 351-153.000.
Reese, Ida L.: *See*—
Reese, Donald M.; and Reese, Ida L., 4,461,549, Cl. 351-153.000.
Refojo, Miguel F.; and Rolando, Maurizio, to Eye Research Institute of Retina Foundation. Non-intrusive tear evaporimeter. 4,461,303, Cl. 128-630.000.
Reichle, Walter T.; and Conte, Louis B., Jr., to Union Carbide Corporation. 1,3,5-Triacrylylhexahydro-s-triazine derivatives. 4,461,893, Cl. 544-215.000.
Reid, John R.: *See*—
Horvath, Ronald F.; Reid, John R.; and Elsmo, Thad F., 4,461,485, Cl. 273-425.000.
Reimann, Ditmar: *See*—
Harms, Hans W.; and Reimann, Ditmar, 4,461,488, Cl. 277-92.000.
Reiterman, Donald R.; and Sundahl, James G., to Bell Helmets Inc. Bicycle helmet retention system with quick disconnect. 4,461,044, Cl. 2-421.000.
Remeika, Victor. System for emergency interruption of continuous casting operations. 4,461,336, Cl. 164-155.000.
Remick, Robert: *See*—
Simonds, Gary; Remick, Robert; and Hayes, Gerald, 4,461,267, Cl. 124-23.00R.
Republic Steel Corporation: *See*—
Harris, Richard M., 4,461,995, Cl. 324-224.000.
Respiratory Care, Inc.: *See*—
Miller, Kenneth G., 4,461,425, Cl. 239-338.000.
Retzlaff, Albert R. Arm wrestling exerciser. 4,461,474, Cl. 272-139.000.
Rex, Mikhail K.: *See*—
Dmitriev, Stanislav P.; Evseev, Anatoly K.; Ivanov, Andrei S.; Komorin, Leonid V.; Nikishkin, Vladimir I.; Nuzhny, Stanislav N.; Rex, Mikhail K.; Sviniin, Mikhail P.; and Fedotov, Mikhail T., 4,461,972, Cl. 313-420.000.
Reymond, Jean C.; and Brisseau, Christian, to Thomson-CSF. Cartographic indicating apparatus, particularly for aerial navigation. 4,462,042, Cl. 358-22.000.
Rhodes, Robert E., to Evergreen Specialty Company. Apparatus for decoratively lighting an outdoor tree. 4,462,065, Cl. 362-250.000.
Rhone-Poulenc Specialites Chimiques: *See*—
Sabot, Jean-Louis; and Leveque, Alain, 4,461,748, Cl. 423-10.000.
RI Consultants, Inc.: *See*—
Lomedico, Philip R., 4,461,043, Cl. 2-21.000.
Rice, Frances J.: *See*—
Williamson, Audley B.; Banks, Stewart; and Rice, Frances J., 4,461,445, Cl. 248-551.000.
Richmond, Therezia L. Barnacle removal process and product. 4,461,652, Cl. 134-2.000.
Richta, Edmund: *See*—
Mitka, Boleslaw; Prajsnar, Tadeusz; Mniszek, Karol; Gorecki, Wilhelm; Kolodziejczyk, Franciszek E.; Madry, Jan; Kielpinski, Ryszard; Gorecki, Boguslaw; Kucharski, Kazimierz; Richta, Edmund; and Maciejewski, Jan, 4,461,419, Cl. 228-5.100.
Richter Gedeon Vegyeszeti Gyar R.T.: *See*—
Banos, Zoltan; Takacs, Istvan; Vereczkey, Endre; and Vigh, Dezso, 4,461,632, Cl. 55-190.000.
Ricoh Company, Ltd.: *See*—
Kawanishi, Toshiyuki; and Tabata, Yukio, 4,461,586, Cl. 400-120.000.
Riead, John T. Fishing float. 4,461,114, Cl. 43-17.500.
Riegger, Helena; Schwander, Jorg; and Volks, Gunter, to BBC Brown, Boveri & Company, Limited. Vertical, collector-type high-pressure feed water preheater, with desuperheater and a device for separating the steam and water phases. 4,461,244, Cl. 122-441.000.
Riessberger, Klaus: *See*—
Theurer, Josef; and Riessberger, Klaus, 4,461,604, Cl. 409-296.000.
Rinelli, Giorgio; and Marabini, Anna M., to Consiglio Nazionale delle Richerche. Process for rutile flotation by means of N-benzoyl-N-phenylhydroxylamine as a selective collector. 4,461,701, Cl. 209-166.000.
Rise, William E., to Android Corporation. Elevator/lowerator. 4,461,381, Cl. 198-773.000.
Riseman, Jacob: *See*—
Ho, Irving T.; and Riseman, Jacob, 4,462,040, Cl. 357-23.000.
Rittal-Werk Rudolf Loh GmbH & Co. Kg.: *See*—
Erlam, David P., 4,461,384, Cl. 206-577.000.
Rittler, Hermann L., to Corning Glass Works. Colored transparent, translucent and opaque glass-ceramics. 4,461,839, Cl. 501-4.000.
Rittman, Friedrich: *See*—
Zollner, Dieter; Lauterbach-Dammler, Inge; Rittman, Friedrich; and Schieber, Franz, 4,462,104, Cl. 373-93.000.
RO Corporation: *See*—
Fritel, Raymond; and McPeak, Garold L., 4,461,490, Cl. 280-763.100.
Robbins, Max L.: *See*—
Bock, Jan; McCall, Patrick P.; Robbins, Max L.; and Siskin, Michael, 4,461,696, Cl. 208-11.0LE.
Robbins, Medford D.; and Rodriguez, Sheila S., to Procter & Gamble Company, The. Low calorie baked products. 4,461,782, Cl. 426-549.000.
Robert Bosch GmbH: *See*—
Becker, Wolfram; Clement, Albrecht; and Daumer, Rolf, 4,461,258, Cl. 123-440.000.

Eheim, Franz; and Hofer, Gerald, 4,461,255, Cl. 123-357.000.
Heitmann, Jurgen, 4,462,049, Cl. 360-10.200.
Jeenicke, Edmund; and Krauter, Immanuel, 4,461,979, Cl. 315-209.00T.
Jung, Werner; and Mall, Hans-Georg, 4,462,038, Cl. 346-163.000.
Kopse, Odon; and Rodriguez-Amaya, Nestor, 4,461,427, Cl. 239-533.500.
Lehmann, Werner; Maier, Sieghart; and Schwartz, Reinhard, 4,461,256, Cl. 123-367.000.

Roberts, Harold A.: *See*—
Breed, Richard A., III; Doyle, Henry W.; and Roberts, Harold A., 4,461,538, Cl. 350-96.200.

Robins, Roland K.; and Srivastava, Prem C., to Brigham Young University. 2-β-D-Ribofuranosylthiazole-4-carboxamidine compounds. 4,461,891, Cl. 536-55.000.

Robinson, McDonald: *See*—
Celler, George K.; Lischner, David J.; and Robinson, McDonald, 4,461,670, Cl. 156-603.000.

Roca-Nierga, Manuel, to SPICA S.p.A. Distributor type injection pump for feeding fuel to an internal combustion engine. 4,461,259, Cl. 123-449.000.

Rock, Lawrence S., to Universal Instruments Corporation. Apparatus for connecting wire to insulation displacement-type contacts. 4,461,061, Cl. 29-33.00M.

Rockenfeller, John D., to United States of America, Air Force. Singlet delta oxygen generator. 4,461,756, Cl. 423-579.000.

Rockwell International Corporation: *See*—
Fowks, William R., 4,462,006, Cl. 331-3.000.
Landt, Harvey L.; and Snider, Glenn R., 4,462,009, Cl. 333-17.00R.
Thiele, Alfred W.; McLain, Robert E.; Martinez, Modesto T., Jr.; Lewis, Richard C.; and Kim, Michael S., 4,462,082, Cl. 364-571.000.

Rodriguez-Amaya, Nestor: *See*—
Kopse, Odon; and Rodriguez-Amaya, Nestor, 4,461,427, Cl. 239-533.500.

Rodriguez, Sheila S.: *See*—
Robbins, Medford D.; and Rodriguez, Sheila S., 4,461,782, Cl. 426-549.000.

Rodseth, William G., to Illinois Tool Works Inc. Self-aligning mounting arrangement. 4,461,593, Cl. 403-11.000.

Rogers, Howard G.; Gaudiana, Russell A.; Manello, Jeannette S.; and Sahatjian, Ronald A., to Polaroid Corporation. Substituted birefringent polyamide. 4,461,886, Cl. 528-331.000.

Rogers, Howard G.; Gaudiana, Russell A.; Manello, Jeannette S.; and Sahatjian, Ronald A., to Polaroid Corporation. Birefringent polymer containing recurring units from dienoic acid. 4,461,887, Cl. 528-345.000.

Rogers, Howard G.; Gaudiana, Russell A.; Manello, Jeannette S.; and Sahatjian, Ronald A., to Polaroid Corporation. Substituted birefringent polyhydrazide. 4,461,888, Cl. 528-363.000.

Rolando, Maurizio: *See*—
Refojo, Miguel F.; and Rolando, Maurizio, 4,461,303, Cl. 128-630.000.

Rolff, Rolf; and Nitsche, Detlev, to Schering AG. System for equalizing current flow in a plurality of branch circuits such as are used in electroplating baths. 4,461,690, Cl. 204-228.000.

Rolls-Royce Limited: *See*—
Dodd, Alec G., 4,461,612, Cl. 416-96.00A.
Hart, Kenneth J.; and Smith, Colin P., 4,461,340, Cl. 165-39.000.

Romanov, Pavel D.: *See*—
Sirotin, Jury G.; Nikolaev, Stanislav V.; Gelfand, Lazar M.; Romanov, Pavel D.; Potapov, Valentin D.; Alexeev, Mikhail S.; Volkov, Evgeny A.; Yalevsky, Vladlen D.; Lukienko, Viktor G.; Popov, Anatoly G.; and Tupikov, Grigory A., 4,461,512, Cl. 299-42.000.

Rose, Thomas C. Appliance holder. 4,461,439, Cl. 248-51.000.

Rosen, Howard N.: *See*—
Kent, Albert C.; and Rosen, Howard N., 4,461,167, Cl. 73-29.000.

Ross, John A. Low temperature hardening of the surface of a ferrous metal workpiece in a fluidized bed furnace. 4,461,656, Cl. 148-16.600.

Ross, Michael D., to RCA Corporation. Noise reduction circuitry for audio signals. 4,462,048, Cl. 358-336.000.

Ross, Ron. Computer program protection method. 4,462,078, Cl. 364-300.000.

Roth, Francis A., to Alldredge, Robert L. Side discharge conveyor assembly. 4,461,378, Cl. 198-365.000.

Roth, Gunter; Quittkat, Wolfram; Frank, Dieter; Muller, Ludwig; and Grassmann, Wilhelm, to BKMI Industrieanlagen GmbH. Method of and apparatus for the cooling of white cement clinker. 4,461,645, Cl. 106-100.000.

Roto-Finish Company, Inc.: *See*—
Balz, Gunther W., 4,461,122, Cl. 51-163.200.

Rottenkolber, Ludwig; and Autenrieth, Karl, to Gustav Magenwirth GmbH & Co. Gas twist grip for handlebars of motor-driven two-wheeled vehicles. 4,461,189, Cl. 74-489.000.

Rowe, Frederick; and Brown, David, to Imperial Chemical Industries PLC. Pyrolysis of hydrocarbons. 4,461,742, Cl. 422-129.000.

Roxlo, Charles B.: *See*—
Salour, Michael M.; Roxlo, Charles B.; and Bebelaar, Dick, 4,462,103, Cl. 372-35.000.

Roxlo, Helen E.: *See*—
Luoma, Robert P., II; and Roxlo, Helen E., 4,461,951, Cl. 219-497.000.

Ruby, Bernard: *See*—
Filliol, Jean-Claude; Ruby, Bernard; and Senechal, Jean, 4,461,333, Cl. 152-158.000.

Rudebeck, Viggo, to Danfoss A/S. Cryopump or heat pump circuit. 4,461,635, Cl. 62-202.000.

Runciman, Herbert M., to Barr & Stroud Limited. Optical scanning system with two sequential reflection stations. 4,461,534, Cl. 350-6.800.

Ruppell, Christian, to Holstein und Kappert GmbH. Method for reducing heat loss in a bottle cleaning machine. 4,461,653, Cl. 134-10.000.

Russell, David B., to Dennison Manufacturing Company. Method of continuous extrusion molding. 4,461,738, Cl. 264-145.000.

RWC Inc.: *See*—
Beauvais, Rene G., 4,461,943, Cl. 219-93.000.

Ryan, Joseph L.; Safdie, Elias; Watkins, Richard R.; and Kobs, Frederick E., to Honeywell Information Systems Inc. Access control logic for video terminal display memory. 4,462,028, Cl. 340-799.000.

S.W. Hooper & Co. Ltd.: *See*—
Cormack, Alexander D., 4,461,606, Cl. 414-325.000.

Sabisch, Willy; and Hufnagel, Friedrich, to Siemens Aktiengesellschaft. Switchgear with Z-shaped insulating terminal cover. 4,461,939, Cl. 200-304.000.

Sabot, Jean-Louis; and Leveque, Alain, to Rhone-Poulenc Specialites Chimiques. Liquid-liquid extraction of rare earth/uranium/thorium values. 4,461,748, Cl. 423-10.000.

Sache, Edgar: *See*—
Lefrancier, Pierre; Parant, Monique; Audibert, Francoise; Sache, Edgar; Chedid, Louis; Choay, Jean; and Lederer, Edgar, 4,461,761, Cl. 424-177.000.

Sachs, Isaac. Strand hanger bracket with common ground connections. 4,461,521, Cl. 339-14.00R.

Safdie, Elias: *See*—
Ryan, Joseph L.; Safdie, Elias; Watkins, Richard R.; and Kobs, Frederick E., 4,462,028, Cl. 340-799.000.

Safford, James H.: *See*—
Whitaker, C. Gordon; and Safford, James H., 4,461,984, Cl. 318-687.000.

Sahatjian, Ronald A.: *See*—
Rogers, Howard G.; Gaudiana, Russell A.; Manello, Jeannette S.; and Sahatjian, Ronald A., 4,461,886, Cl. 528-331.000.
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Rogers, Howard G.; Gaudiana, Russell A.; Manello, Jeannette S.; and Sahatjian, Ronald A., 4,461,888, Cl. 528-363.000.

Saikatsu, Takeo; Anzai, Yoshinori; Kajiwara, Toshiro; Kobayashi, Goroku; and Morimoto, Shunichi, to Mitsubishi Denki Kabushiki Kaisha. Low pressure inert gas discharge device. 4,461,981, Cl. 315-246.000.

Sainte-Foi, Daniel: *See*—
Massol, Jean-Jacques; and Sainte-Foi, Daniel, 4,461,840, Cl. 501-36.000.

Saisu, Tadakatsu: *See*—
Murase, Itaru; Saisu, Tadakatsu; and Hasegawa, Kinichi, 4,461,777, Cl. 426-330.600.

Saitoh, Koetsu: *See*—
Kawabuchi, Masami; Satoh, Junichi; Muramatsu, Fumio; and Saitoh, Koetsu, 4,462,092, Cl. 367-105.000.

Saitou, Naotada, to Dainippon Screen Seizo Kabushiki Kaisha. Method for recording color separation picture images and an outline image simultaneously. 4,462,043, Cl. 358-75.000.

Saji, Ikutaro; Yamazaki, Hiroshi; Aono, Shunji; Ichise, Katsuaki; and Okuda, Takao, to Sumitomo Chemical Company, Limited. Antifungal imidazolylcarboxylic acids and their derivatives. 4,461,774, Cl. 424-273.00R.

Sakai, Shinji: *See*—
Murakami, Hiroyasu; Uchiyama, Takashi; Suzuki, Ryoichi; Kawamura, Masaharu; Sakai, Shinji; and Momiyama, Kikuo, 4,462,025, Cl. 340-753.000.

Sakakibara, Mitsuhiko: *See*—
Takeuchi, Yasumasa; Sakakibara, Mitsuhiko; and Shibata, Tooru, 4,461,883, Cl. 526-139.000.

Saleh, Adel A. M.: *See*—
Cox, Donald C.; and Saleh, Adel A. M., 4,462,004, Cl. 330-277.000.

Salisbury, David R.: *See*—
Duckett, Melvyn; Ashton, Gregory J.; and Salisbury, David R., 4,461,634, Cl. 62-11.000.

Salkinoja-Salonen, Miria: *See*—
Hakulinen, Risto; Salkinoja-Salonen, Miria; Rasanen, Jorma; and Kyytsonen, Juhani, 4,461,708, Cl. 210-605.000.

Salour, Michael M.; Roxlo, Charles B.; and Bebelaar, Dick, to United States of America, Air Force. Tunable CW semiconductor platelet laser. 4,462,103, Cl. 372-35.000.

Sampson, Stephen A.: *See*—
Raymer, Jack D., II; Sampson, Stephen A.; and Crane, Burke J., 4,461,537, Cl. 350-96.200.

Samuelsen, Peter, to Coloplast A/S. Dispenser for dispensing a laminated web. 4,461,668, Cl. 156-543.000.

Sanders Associates, Inc.: *See*—
Upton, Ralph G., 4,462,093, Cl. 367-165.000.

Sankey, Bruce M.: *See*—
Briens, Cedric L.; and Sankey, Bruce M., 4,461,698, Cl. 208-33.000.

Sankyo Company Limited: *See*—
Terada, Atsusuke; Naruto, Shunji; and Misaka, Eiichi, 4,461,912, Cl. 562-468.000.

Sanner, Axel: *See*—
Tachang, Chung-Ji; Klefenz, Heinrich; Sanner, Axel; and Zahn, Wolfgang, 4,461,832, Cl. 435-176.000.

Sano, Kenji; Kondo, Syunichi; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Photoconductive compositions and electrophotographic photo-

sensitive materials comprising an organic photoconductor and a thiourea compound. 4,461,821, Cl. 430-83.000.

Sanshin Kogyo Kabushiki Kaisha: *See*—
Nomaka, Kimihiro; and Matsushita, Yukio, 4,461,260, Cl. 123-478.000.

Sasaki, Tetsuo: *See*—
Nakamura, Tsutomu; Kuroda, Akira; Onishi, Masatoshi; and Sasaki, Tetsuo, 4,461,852, Cl. 521-121.000.

Sasaki, Toshiharu: *See*—
Watanabe, Shuichi; Katakabe, Noboru; and Sasaki, Toshiharu, 4,461,588, Cl. 400-144.200.

Sasaki, Yozo: *See*—
Nagata, Osamu; Matsukura, Satoru; Yamada, Hajime; and Sasaki, Yozo, 4,461,142, Cl. 60-39.020.

Sasaki, Yutaka; and Utsumi, Hiroshi, to Nitto Chemical Industry Co., Ltd. Process for the production of hydrogen cyanide. 4,461,752, Cl. 423-376.000.

Sashida, Iwao: *See*—
Melillo, Louis; Haga, Tsutomu; and Sashida, Iwao, 4,461,930, Cl. 179-110.00A.

Sasnett, Bolling H., Jr. Liquid dispenser assembly. 4,461,401, Cl. 222-27.000.

Sato, Hideo: *See*—
Sano, Kenji; Kondo, Syunichi; and Sato, Hideo, 4,461,821, Cl. 430-83.000.

Sato, Shigeru: *See*—
Betsudan, Shinichi; Aoki, Katsuhiko; Sato, Shigeru; and Katagi, Takashi, 4,462,034, Cl. 343-761.000.

Sato, Susumu; Hattori, Tadashi; Ueno, Yoshiki; and Taguchi, Takashi, to Nippon Soken, Inc. Heat rays reflecting film. 4,461,532, Cl. 350-1.600.

Satoh, Junichi: *See*—
Kawabuchi, Masami; Satoh, Junichi; Muramatsu, Fumio; and Saitoh, Koetsu, 4,462,092, Cl. 367-105.000.

Satoh, Yoshio; Ohashi, Makoto; Miyashita, Tsutomu; Matsuda, Kazuo; and Komenou, Kazunari, to Fujitsu Limited. Ion-implanted bubble device. 4,462,087, Cl. 365-36.000.

Sattelberg, Stanley E.; and Baker, George A., to Chicago Bridge & Iron Company. Liquid storage tank conduit connection. 4,461,399, Cl. 220-444.000.

Sauermann, Heinz: *See*—
Ewaldt, Helmut; Raabe, Gerhard; Sauermann, Heinz; and Burmeister, Rainer, 4,462,019, Cl. 338-15.000.

Savit, Joseph. Method for increasing the through-conductivity of a cellophane substrate. 4,461,787, Cl. 427-121.000.

Scarola, Leonard S.: *See*—
Jones, David N.; Haapala, Urho S.; and Scarola, Leonard S., 4,461,734, Cl. 264-176.00R.

Schaap, Louise: *See*—
Shalaby, Shalaby W.; Stephenson, Martin; Schaap, Louise; and Hartley, Graham H., deceased, 4,461,298, Cl. 128-335.500.

Schade, Otto H., Jr., to RCA Corporation. Trimming circuits for precision amplifier. 4,462,002, Cl. 330-253.000.

Schaefer, Jeffrey T. Fastener driving tool. 4,461,418, Cl. 227-147.000.

Schaffer, Franz: *See*—
Larsson, Peter; and Schaffer, Franz, 4,461,272, Cl. 126-64.000.

Schaffner, Kurt: *See*—
Demuth, Martin; and Schaffner, Kurt, 4,461,687, Cl. 204-158.00R.

Schandle, Alfred J.; and Bakoledis, Andrew G. System for detaining robbers on premises. 4,461,221, Cl. 109-6.000.

Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Neubert, Peter, to Boehringer Mannheim GmbH. Oximes of 3''-dehydrocardenolide tridigitoxosides. 4,461,763, Cl. 424-182.000.

Schenck, Hans-Uwe: *See*—
Gimpel, Juergen; Schwendemann, Volker; Schenck, Hans-Uwe; and Gulbins, Erich, 4,461,880, Cl. 525-528.000.

Schenectady Chemicals, Inc.: *See*—
Walrath, George A.; and Smith, Scott D., 4,461,805, Cl. 428-349.000.

Schenk, Gunther: *See*—
Bergthaller, Peter; Schenk, Gunther; and Wolfrum, Gerhard, 4,461,827, Cl. 430-562.000.

Schering AG: *See*—
Rolff, Rolf; and Nitsche, Detlev, 4,461,690, Cl. 204-228.000.

Schertler, Manfred K. Sheet type composite material and method and apparatus for manufacturing the same. 4,461,665, Cl. 156-210.000.

Scheunemann, Kurt: *See*—
Lindner, Friedrich; and Scheunemann, Kurt, 4,461,153, Cl. 62-3.000.

Scheurer, Roger J.: *See*—
Peterson, Richard L.; Johnson, James A.; Scheurer, Roger J.; and Steinberg, Richard W., 4,461,355, Cl. 172-156.000.

Schieber, Franz: *See*—
Zollner, Dieter; Lauterbach-Dammler, Inge; Rittman, Friedrich; and Schieber, Franz, 4,462,104, Cl. 373-93.000.

Schiehser, Guy A.: *See*—
Potoski, John R.; Schiehser, Guy A.; and Strike, Donald P., 4,461,901, Cl. 546-270.000.

Schilp, Reinhold: *See*—
Hultsch, Gunther; Baumgartner, Siegfried; Bock, Harald; and Schilp, Reinhold, 4,461,093, Cl. 34-8.000.

Schindel, Arnold, to Singer Company, The. Apparatus for cleaning stator windings. 4,461,031, Cl. 15-21.00E.

Schlageter, Bernhard: *See*—
Baier, Erich; Koefferlein, Rainer; and Schlageter, Bernhard, 4,461,238, Cl. 118-658.000.

Schley, Ronald F.: *See*—
Hartman, G. William, Jr.; and Schley, Ronald F., 4,461,465, Cl. 271-22.000.

Schlumberger Technology Corp.: *See*—
Ohmer, Herve, 4,461,997, Cl. 324-338.000.

Schmidt, Adolf, to Bayer Aktiengesellschaft. Process for concentrating aqueous dispersions of polymers of conjugated dienes. 4,461,863, Cl. 524-157.000.

Schmidt, Richard O.; and King, Ace E., to Steel-N-Foam Docks, Inc. Sub-structure for boat docks. 4,461,132, Cl. 52-656.000.

Schmoock, Roy F., to Fischer & Porter Company. Constant-current duty-cycle driver for electromagnetic flowmeter. 4,462,060, Cl. 361-154.000.

Schnalke, Heinz H., to Bohm & Braunwalder KG. Process and apparatus for drying vehicles. 4,461,094, Cl. 34-9.000.

Schneider, Franz; Bergmann, Ewald; Kurz, Otto; and Dommer, Hans-Martin, to L. Schuler GmbH. Automatic slotting apparatus with tool changing device. 4,461,068, Cl. 29-568.000.

Schneider, Gottfried: *See*—
Hofmann, Eberhard; Schneider, Gottfried; and Pohn, Johann, 4,461,141, Cl. 57-408.000.

Schneider, Kurt, to Eddelbuttel & Schneider. Rubber hose. 4,461,324, Cl. 138-174.000.

Schnoes, Heinrich K.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; and Hart, Leslie E., 4,461,766, Cl. 424-236.000.

Schoffel, Rainer, to Bodenseewerk Perkin-Elmer & Co., GmbH. Injection needle. 4,461,185, Cl. 73-864.010.

Schofield, John D.; and Vinther, Arne, to Imperial Chemical Industries Limited. Fluidizing agent. 4,461,647, Cl. 106-308.00N.

Schottle, Helmut A. M., to Pitney Bowes Inc. Embossing machine having a movable carriage for character and like spacing. 4,461,587, Cl. 400-131.000.

Schramm, William M., II. Mitre box system for cutting compound angles. 4,461,196, Cl. 83-13.000.

Schubert & Salzer, AG: *See*—
Hofmann, Eberhard; Schneider, Gottfried; and Pohn, Johann, 4,461,141, Cl. 57-408.000.

Schutze, Detlef-Ingo; and Adams, Anton, to Bayer Aktiengesellschaft. Process for the preparation of S-arylthioglycolic acids. 4,461,911, Cl. 562-427.000.

Schwander, Jorg: *See*—
Riegger, Helena; Schwander, Jorg; and Volks, Gunter, 4,461,244, Cl. 122-441.000.

Schwartz, Reinhard: *See*—
Lehmann, Werner; Maier, Sieghart; and Schwartz, Reinhard, 4,461,256, Cl. 123-367.000.

Schwarz, James. Retention clip for wheel covers. 4,461,514, Cl. 301-37.0CD.

Schwefel, Ernst, to Dr. Johannes Heidenhain GmbH. Method of interval interpolation. 4,462,083, Cl. 364-577.000.

Schweitzer, Robert B. Compact battery-powered headlamp. 4,462,064, Cl. 362-105.000.

Schwendemann, Volker: *See*—
Gimpel, Juergen; Schwendemann, Volker; Schenck, Hans-Uwe; and Gulbins, Erich, 4,461,880, Cl. 525-528.000.

Scott, Gerald: *See*—
Gilead, Dan; and Scott, Gerald, 4,461,853, Cl. 523-126.000.

Scottish & Newcastle Breweries Limited: *See*—
Kesson, James, 4,461,165, Cl. 73-19.000.

SDS Biotech Corporation: *See*—
Marecki, Paul E.; and Weaver, John M., 4,461,772, Cl. 424-269.000.

Seaman, Gary G., to AT&T Technologies, Inc. Methods of and apparatus for dispensing and positioning tape onto a surface. 4,461,197, Cl. 83-152.000.

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Hermecz, Istvan; Meszaros, Zoltan; Breining, Tibor; Virag, Sandor; Vasvari nee Debreczy, Lelle; Horvath, Agnes; Nagy, Gabor; Mandi, Attila; Szucs, Tamas; Bitter, Istvan; and Sebestyen, Gyula, 4,461,769, Cl. 424-251.000.

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Hartley, M. Barrie; Hale, David L.; and Sefcik, Vincent, 4,461,230, Cl. 114-90.000.

Segletes, Diana E. Matting device. 4,461,086, Cl. 33-189.000.

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Seiko Instruments & Electronics Ltd.: *See*—
Obara, Nobuo, 4,461,583, Cl. 368-260.000.

Sekmakas, Kazys; and Shah, Raj, to DeSoto, Inc. Thermosetting aqueous coating compositions containing epoxy-phosphate dispersions. 4,461,857, Cl. 523-414.000.

Selden, Otto C.: *See*—
Norris, John; and Selden, Otto C., 4,461,554, Cl. 354-275.000.

Self Regulation Systems, Inc.: *See*—
Ochs, Leonard A., 4,461,301, Cl. 128-630.000.

Selines, Ronald J.: *See*—
Rana, Mahendrasinh D.; and Selines, Ronald J., 4,461,657, Cl. 148-36.000.

Selsted, Walter T., to Arneson Products, Inc. Pool cleaning device for operation under floating pool cover. 4,461,704, Cl. 210-169.000.

Selway, John W. T.: *See*—
Batchelor, John F.; Bauer, Denis J.; Hodson, Harold F.; Selway, John W. T.; and Young, David A. B., 4,461,907, Cl. 549-406.000.
Sendel, Uwe; and Nofer, Karl, to Pano Cap (Canada) Limited. Closure cap and container. 4,461,394, Cl. 215-330.000.
Senechal, Jean: *See*—
Filliol, Jean-Claude; Ruby, Bernard; and Senechal, Jean, 4,461,333, Cl. 152-158.000.
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Suzuki, Shigeyoshi; Uchida, Koji; Yamada, Jun; and Senga, Takao, 4,461,818, Cl. 430-49.000.
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Barbarin, Michel; and Dufau, Ghislain, 4,461,716, Cl. 252-307.000.
Seragnoli, Enzo, to G.D. Societa per Azioni. Device for breaking at least one continuous rod in a machine for making products for smokers. 4,461,415, Cl. 225-98.000.
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Uchida, Tohru; Suzuki, Shigehiro; Yajima, Tatsuo; and Seto, Yutaka, 4,461,466, Cl. 271-22.000.
Shadwick, Jan, to Manville Service Corporation. Luminaire with improved lens structure. 4,462,068, Cl. 362-332.000.
Shah, Raj: *See*—
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Shalaby, Shalaby W.; Stephenson, Martin; Schaap, Louise; and Hartley, Graham H., deceased (by Hartley, Marilyn, personal representative), to Ethicon, Inc. Composite sutures of silk and hydrophobic thermoplastic elastomers. 4,461,298, Cl. 128-335.500.
Shapess, Robert P., to Snyder General Corporation. Ground water heat pump system for low yield well. 4,461,157, Cl. 62-238.600.
Shapiro, Gerald N.: *See*—
Neumann, Leopold; Shapiro, Gerald N.; and Mattedi, Bruno A., 4,462,029, Cl. 340-825.500.
Shaw, Herbert J.; and Digonnet, Michel J. F., to Leland Stanford Jr. University, Board of Trustees of. Fiber coupler displacement transducer. 4,461,536, Cl. 350-96.150.
Shaw, Herbert J.; and Arditty, Herve J., to United States of America, Air Force. Environmentally independent fiber optic rotation sensor. 4,461,574, Cl. 356-350.000.
Sheaffer, Benjamin L., to Brunswick Corporation. Crankcase supercharged four cycle engine with jet pump assist. 4,461,251, Cl. 123-317.000.
Shell Oil Company: *See*—
Bauer, Ronald S.; and Corley, Larry S., 4,461,879, Cl. 525-526.000.
Diaz, Zaida, 4,461,754, Cl. 423-573.00R.
Drent, Eit, 4,461,910, Cl. 560-263.000.
Eilers, Jacobus; and Stork, Willem H. J., 4,461,699, Cl. 208-89.000.
Shepard, John S. Dispenser. 4,461,408, Cl. 222-501.000.
Sherman, Rand C.; and Kenan, Richard P., to Battelle Memorial Institute. Forming and reading holograms. 4,461,533, Cl. 350-372.000.
Sherwin-Williams Company, The: *See*—
Karickhoff, Michael, 4,461,849, Cl. 521-64.000.
Shibata, Koichi: *See*—
Minato, Ichiro; Shibata, Koichi; and Furuoya, Itsuo, 4,461,878, Cl. 525-504.000.
Shibata, Tooru: *See*—
Takeuchi, Yasumasa; Sakakibara, Mitsuhiko; and Shibata, Tooru, 4,461,883, Cl. 526-139.000.
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; and Suzuki, Takatoshi, to Sumitomo Chemical Co., Ltd. Process for the production of purified propylene homopolymers or copolymers. 4,461,881, Cl. 526-118.000.
Shin-Etsu Chemical Co., Ltd.: *See*—
Takamizawa, Minoru; Umemura, Mitsuo; and Kobayashi, Taishi, 4,461,908, Cl. 556-430.000.
Shinada, Shinichi: *See*—
Mikoshiba, Shigeo; Shinada, Shinichi; and Shirai, Shoji, 4,461,978, Cl. 315-169.400.
Shinhan Kongki Co., Ltd.: *See*—
Han, Eui M., 4,461,174, Cl. 73-275.000.
Shiomi, Teiichi; and Kishimura, Kotaro, to Mitsui Petrochemical Industries, Ltd. Surface treating agent as an undercoat on surface of polyolefin shaped articles. 4,461,809, Cl. 428-482.000.
Shionogi & Co., Ltd.: *See*—
Takagishi, Yasushi; Ohsuga, Kiichiro; and Ohama, Sadao, 4,461,765, Cl. 424-229.000.
Shiotari, Yoshihisa, to Tokyo Shibaura Denki Kabushiki Kaisha. Voltage comparator using CMOS transistors. 4,461,964, Cl. 307-362.000.
Shirai, Shigeru; Kanbe, Junichiro; and Fukuda, Tadaji, to Canon Kabushiki Kaisha. Amorphous silicon electrophotographic image-forming member having an aluminum oxide coated substrate. 4,461,820, Cl. 430-65.000.
Shirai, Shoji: *See*—
Mikoshiba, Shigeo; Shinada, Shinichi; and Shirai, Shoji, 4,461,978, Cl. 315-169.400.
Shirai, Tadao, to Nippon Electric Co., Ltd. Output coupling circuit for a cavity oscillator. 4,462,007, Cl. 331-96.000.
Shirogami, Tamotsu; and Ueno, Mitsushi, to Tokyo Shibaura Denki Kabushiki Kaisha. Electrochemical power generator. 4,461,813, Cl. 429-34.000.
Shorter, John J.; and Brewer, Michael W., to Chas. A. Blatchford & Sons Ltd. Artificial leg. 4,461,045, Cl. 3-32.000.
Shpigelman, David. Locking device. 4,461,161, Cl. 70-352.000.
Shubow, Calvin. Building construction using hollow core wall slabs. 4,461,130, Cl. 52-236.800.
Shudo, Hirokazu: *See*—
Harigane, Kotaro; Takahashi, Kenichi; Shudo, Hirokazu; and Tando, Shuichi, 4,461,610, Cl. 414-752.000.
Shuk, Steve: *See*—
Cole, John W., 4,461,473, Cl. 272-123.000.
Shuler, Bernard R., to Allis-Chalmers Corp. Combination lighting and filtering unit for a clean room. 4,461,205, Cl. 98-40.0DL.
Shuman, Robert J.: *See*—
Cannella, Vincent D.; Nath, Prem; and Shuman, Robert J., 4,461,239, Cl. 118-718.000.
Shutt, Donald P., to Western Gear Corporation. On-board aircraft engine starting apparatus. 4,461,143, Cl. 60-39.142.
Siegers, Gunter, to Bayer Aktiengesellschaft. Apparatus for the countercurrent treatment of liquids with adsorbents. 4,461,706, Cl. 210-275.000.
Siemens Aktiengesellschaft: *See*—
Baier, Erich; Koefferlein, Rainer; and Schlageter, Bernhard, 4,461,238, Cl. 118-658.000.
Diepers, Heinrich, 4,461,689, Cl. 204-192.00N.
Hebenstreit, Ernst, 4,461,966, Cl. 307-571.000.
Kuhlow, Jurgen; and Sohrt, Christian, 4,461,218, Cl. 105-137.000.
Sabisch, Willy; and Hufnagel, Friedrich, 4,461,939, Cl. 200-304.000.
Ziegler, Alfred, 4,462,058, Cl. 361-62.000.
Siemens Corporation: *See*—
Wagner, Theodore; and Gray, Donald, 4,462,105, Cl. 375-8.000.
Sierra Instruments, Inc.: *See*—
Olin, John G., 4,461,173, Cl. 73-203.000.
Signetics Corporation: *See*—
Koomen, Joannes J. M., 4,461,963, Cl. 307-279.000.
Sih, Charles J., to Wisconsin Alumni Research Foundation. Process for preparing optically-active isoprenoid intermediates. 4,461,835, Cl. 435-280.000.
Simon, Jerome H. Light beam clock. 4,461,581, Cl. 368-79.000.
Simonds, Gary; Remick, Robert; and Hayes, Gerald, to Kidde Reaction Products, Inc. Compound bow. 4,461,267, Cl. 124-23.00R.
Sims, Terence B. H., to Superior Robotic Transporters, Inc. Transporting system for robot. 4,461,215, Cl. 104-1.00R.
Sinelschikov, Andrei K.: *See*—
Gavrilov, Alexei G.; Galitskaya, Galina K.; Zhed, Viktor P.; Sinelschikov, Andrei K.; Padalka, Valentin G.; Boyarunas, Albert M.; Panin, Vyacheslav N.; and Barinov, Vitaly N., 4,461,799, Cl. 428-210.000.
Singer Company, The: *See*—
Schindel, Arnold, 4,461,051, Cl. 15-21.00E.
Singh, Rajendra K., to Monsanto Company. N-Halo phosphonomethylamine derivatives as herbicides. 4,461,639, Cl. 71-86.000.
Sinnreich, Joel: *See*—
Batzer, Hans; and Sinnreich, Joel, 4,461,709, Cl. 210-643.000.
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Erard, Raoul-Henri, 4,461,580, Cl. 368-77.000.
Sirotin, Jury G.; Nikolaev, Stanislav V.; Gelfand, Lazar M.; Romanov, Pavel D.; Potapov, Valentin D.; Alexeev, Mikhail S.; Volkov, Evgeny A.; Yalevsky, Vladlen D.; Lukienko, Viktor G.; Popov, Anatoly G.; and Tupikov, Grigory A., to Podmoskovny Nauchno-Issledovatelsky I Proektnokonstruktorsky Ugolny Institut. Feed system of a mining combine. 4,461,512, Cl. 299-42.000.
Sirtl, Erhard: *See*—
Seifert, Dieter; Sirtl, Erhard; and Gessert, Cord, 4,461,671, Cl. 156-607.000.
Siskin, Michael: *See*—
Bock, Jan; McCall, Patrick P.; Robbins, Max L.; and Siskin, Michael, 4,461,696, Cl. 208-11.0LE.
Sizmann, Rudolf, to Didier-Werke A.G. Method for increasing the temperature of gaseous inert carrier medium on taking useful heat from a storage medium storing heat by water sorption. 4,461,339, Cl. 165-1.000.
Skedco, Inc.: *See*—
Calkin, Carston R.; and Trotti, Pasqualle, 4,461,104, Cl. 36-132.000.
Slocum, Roger K. Internal measuring gauge. 4,461,084, Cl. 33-165.000.
Small, Edward A.; and Wright, Geoff C., to British American Bank Note Inc. Plastic identification card having an improved signature panel. 4,462,039, Cl. 346-206.000.
SMH Alcatel: *See*—
Geney, Christian, 4,461,212, Cl. 101-407.00R.
Smith, Clay D.; and Keller, Douglas V., Jr., to Otisca Industries, Ltd. Methods of cleaning coal. 4,461,625, Cl. 44-10.00R.
Smith, Colin P.: *See*—
Hart, Kenneth J.; and Smith, Colin P., 4,461,340, Cl. 165-39.000.
Smith Engineering: *See*—
Smith, Jay, III, 4,462,076, Cl. 364-200.000.
Smith, Fred T., to Heil Co., The. Refuse container gripping apparatus. 4,461,607, Cl. 414-406.000.
Smith, Gary F.: *See*—
Fox, Daniel W.; Peters, Edward N.; and Smith, Gary F., 4,461,877, Cl. 525-439.000.
Smith, Jay, III, to Smith Engineering. Video game cartridge recognition and security system. 4,462,076, Cl. 364-200.000.
Smith, Michael D., to Motorola, Inc. Current source circuit having reduced error. 4,461,991, Cl. 323-312.000.
Smith R.P.M. Corporation: *See*—
Washchynsky, Bohdan; and Fusco, Ralph L., 4,461,209, Cl. 101-219.000.
Smith, Robert A., to General Electric Company. Room temperature vulcanizable polysiloxane having a heat-activated catalyst. 4,461,854, Cl. 523-211.000.

Smith, Samuel C. Picture window storm window. 4,461,119, Cl. 49-34.000.

Smith, Scott D.: *See*—
Walrath, George A.; and Smith, Scott D., 4,461,805, Cl. 428-349.000.

Smock, Steven W., to Emhart Industries, Inc. Method of providing a clutch between a motor drive means and a cam programming means. 4,461,064, Cl. 29-434.000.

Snia Viscosa Societa' Nazionale Industria Aplicazioni Viscosa SpA: *See*—
Carignani, Giancarlo; Cipriani, Aldo; and Mazzola, Massimo, 4,461,850, Cl. 521-91.000.

Snider, Glenn R.: *See*—
Landt, Harvey L.; and Snider, Glenn R., 4,462,009, Cl. 333-17.00R.

Snider, William. Simulated cake and collapsible container therefor. 4,461,790, Cl. 428-7.000.

Snyder General Corporation: *See*—
Shapess, Robert P., 4,461,157, Cl. 62-238.600.

S.A. des Etablissements Staubli: *See*—
Palau, Joseph; and Froment, Jean-Paul, 4,461,325, Cl. 139-68.000.

Societe d'Assistance Technique pour Produits Nestle, S.A.: *See*—
Akesson, Yngve R.; Bengtsson, Bengt L.; and Bodenaes, Lars G., 4,461,781, Cl. 426-524.000.

Societe Nationale des Poudres et Explosifs: *See*—
Autret, Lucien; and Godfrin, Jean-Philippe, 4,461,213, Cl. 102-335.000.

SOFRALAB, Societe Francaise des Laboratoires d'Oenologie: *See*—
Vialatte nee Geolier, Christiane S. E. L., 4,461,778, Cl. 426-422.000.

Sohrt, Christian: *See*—
Kuhlow, Jurgen; and Sohrt, Christian, 4,461,218, Cl. 105-137.000.

Sokola, Raymond L.: *See*—
D'Avello, Robert F.; and Sokola, Raymond L., 4,462,098, Cl. 370-30.000.

Soland, John P.; and Bridges, Charles D., to Combustion Engineering, Inc. Remote control choke. 4,461,450, Cl. 251-63.500.

Solinski, Walter. Shower and decorative curtain suspension for a bathroom stall. 4,461,056, Cl. 16-87.40R.

Soltis, Andrew P.: *See*—
Ustin, George; and Soltis, Andrew P., 4,461,523, Cl. 339-41.000.

Sony Corporation: *See*—
Kani, Tetsuo, 4,461,433, Cl. 242-75.510.
Katakura, Masayuki, 4,462,008, Cl. 333-14.000.
Kusaka, Satoshi, 4,462,096, Cl. 369-45.000.
Watanabe, Kazuo; and Sugita, Masaru, 4,462,021, Cl. 340-347.0DA.
Yamamoto, Senji; and Yamamoto, Kihee, 4,462,085, Cl. 364-900.000.

Sony/Tektronix: *See*—
Takamatsu, Hajime, 4,462,003, Cl. 330-254.000.

Sorenson, Richard W., to Carlingswitch, Inc. Switch case construction. 4,461,938, Cl. 200-296.000.

Sourirajan, Srinivasa: *See*—
Thayer, William L.; Bennett, Adam J.; Kustowy, Oleh; and Sourirajan, Srinivasa, 4,461,707, Cl. 210-321.100.

SPA Societa Prodotti Antibiotici S.p.A.: *See*—
Dell'Acqua, Ernani; Bruzzese, Tiberio; and Ferrari, Lorenzo, 4,461,768, Cl. 424-246.000.

Spacegraph, Ltd.: *See*—
Thomason, Robert L.; and Stover, Henry S., 4,462,044, Cl. 358-89.000.

Speegle, Steven C.: *See*—
Vinzant, Michael B.; Speegle, Steven C.; Meaders, Michael W.; and Hilts, Robert L., 4,461,353, Cl. 166-322.000.

Sperry Corporation: *See*—
De Busscher, Cyriel R. J., 4,461,306, Cl. 130-27.00R.
Dong, Charles W.; and Barrat, Michel, 4,462,054, Cl. 360-106.000.
McMahon, Donald H., 4,461,543, Cl. 350-383.000.

SPICA S.p.A.: *See*—
Roca-Nierga, Manuel, 4,461,259, Cl. 123-449.000.

Spight, Carl, to AMAF Industries Incorporated. Machine vision system utilizing programmable optical parallel processing. 4,462,046, Cl. 358-101.000.

Squire, William D.: *See*—
Kerber, George L.; and Squire, William D., 4,462,012, Cl. 333-167.000.

Srivastava, Prem C.: *See*—
Robins, Roland K.; and Srivastava, Prem C., 4,461,891, Cl. 536-55.000.

Stagga, Arnol; and Flores, Margarita C. Mining drill with apertures and collars providing for flow of debris. 4,461,362, Cl. 175-325.000.

Stallings, John P.: *See*—
Gardner, Ross, Jr.; Falco, Robert N.; and Stallings, John P., 4,461,290, Cl. 128-152.000.

Stalson, Stanley L.; and Johns, William H., to Wire Lab Company. Method for removing scale dust from steel rod after mechanical descaling. 4,461,654, Cl. 134-10.000.

Standard Oil Company: *See*—
Mount, Houston B., II, 4,461,360, Cl. 175-78.000.
Wu, Mu-Yen M.; and Ball, Lawrence E., 4,461,885, Cl. 528-310.000.

Standard Oil Company (Indiana): *See*—
Klotz, Marvin R., 4,461,921, Cl. 583-481.000.
Penne, Roger A., 4,461,494, Cl. 346-211.000.

Stanek, Oldrich; and Bloeck, Siegfried, to Swiss Aluminium Ltd. Process for manufacturing lids with a closure strip covering at least one pouring hole, in particular such lids for beverage cans. 4,461,605, Cl. 413-8.000.

Stanley, Kerry G.; and Ho, Winston, to McNeilab, Inc. Hydroxythioether fatty acid derivatives. 4,461,775, Cl. 424-311.000.

Stanton, George E., to NuJack Corporation. Pump jack. 4,461,187, Cl. 74-41.000.

Statiflo, Inc.: *See*—
McCallum, Henry, 4,461,579, Cl. 366-337.000.

Stauffer Chemical Company: *See*—
Anzenberger, Joseph F., Sr., 4,461,713, Cl. 252-49.900.

Steel-N-Foam Docks, Inc.: *See*—
Schmidt, Richard O.; and King, Ace E., 4,461,132, Cl. 52-656.000.

Steele, Elmer. Push to pull force converter. 4,461,457, Cl. 254-93.00R.

Steiger Tractor Inc.: *See*—
Majkrzak, David S., 4,461,249, Cl. 123-142.50E.

Steinberg, Richard W.: *See*—
Peterson, Richard L.; Johnson, James A.; Scheurer, Roger J.; and Steinberg, Richard W., 4,461,355, Cl. 172-156.000.

Stenman Holland B.V.: *See*—
van der Horst, Jasper, 4,461,500, Cl. 292-128.000.

Stephens, Frederick D., to United States of America, Air Force. Stall elimination and restart enhancement device. 4,461,145, Cl. 60-226.300.

Stephenson, Martin: *See*—
Shalaby, Shalaby W.; Stephenson, Martin; Schaap, Louise; and Hartley, Graham H., deceased, 4,461,298, Cl. 128-335.500.

Sterling Drug Inc.: *See*—
Chowdhury, Ajit K.; Bauer, Gerald L.; and Lehmann, Richard W., 4,461,743, Cl. 422-129.000.

Stewart, Andrew D. G.: *See*—
Welbourn, Christopher M.; Ditchburn, Robert W.; and Stewart, Andrew D. G., 4,461,568, Cl. 356-30.000.

Stewart, Eddie A. Method and apparatus for improving the performance of a batter. 4,461,477, Cl. 273-26.00R.

Stihl, Andreas: *See*—
Zerrer, Gerhard; and Trumpf, Hans, 4,461,055, Cl. 15-344.000.

Still GmbH: *See*—
Krohling, Erich; and Kremer, Manfred, 4,461,958, Cl. 290-45.000.

Stimtech, Inc.: *See*—
Bailey, William D., 4,461,075, Cl. 29-825.000.

Stitt, Thomas D., to General Electric Company. Speed reducing control system for a polyphase electric motor. 4,461,985, Cl. 318-727.000.

Stolarczyk, Larry G., to A. R. F. Products, Inc. Security system with radio frequency coupled remote sensors. 4,462,022, Cl. 340-506.000.

Stork, Willem H. J.: *See*—
Eilers, Jacobus; and Stork, Willem H. J., 4,461,699, Cl. 208-89.000.

Stover, Henry S.: *See*—
Thomason, Robert L.; and Stover, Henry S., 4,462,044, Cl. 358-89.000.

Strammello, Peter, to Zenith Electronics Corporation. UHF/VHF Splitter-balun assembly. 4,462,010, Cl. 333-126.000.

Strassler, Sigfrid: *See*—
Erni, Peter; Kogelschatz, Ulrich; Strassler, Sigfrid; and Wiesmann, Hans-Jurg, 4,461,744, Cl. 422-186.180.

Strehler, Richard: *See*—
Eichinger, Johann; Strehler, Richard; and Bartl, Max, 4,461,367, Cl. 180-252.000.

Strickler, Ernst, to Mettler Instrumente AG. Flexure coupling member for precision weighing apparatus. 4,461,364, Cl. 177-255.000.

Strike, Donald P.: *See*—
Potoski, John R.; Schiehser, Guy A.; and Strike, Donald P., 4,461,901, Cl. 546-270.000.

Strolle, Christopher H., to RCA Corporation. Memory scanning address generator. 4,462,024, Cl. 340-727.000.

Studiecentrum voor Kernenergie, "S.C.K": *See*—
Geens, Ludo P. M.; Goossens, Walter R. A.; and Van Dooren, Jan J. J. L., 4,461,683, Cl. 204-105.00R.

Studiengesellschaft Kohle MBH: *See*—
Demuth, Martin; and Schaffner, Kurt, 4,461,687, Cl. 204-158.00R.

Stunis, Janet: *See*—
McGarry, Charles N.; Stunis, Janet; and Wehrenberg, Thomas M., 4,461,843, Cl. 501-102.000.

Su, Aaron C. L., to Du Pont de Nemours, E. I., and Company. Blends of a propylene/α-olefin copolymer with isotactic prolypropylene. 4,461,872, Cl. 525-240.000.

Sugano, Nobuhiko; Iizuka, Chiyokichi; and Maeda, Hiroaki, to Noda Shokukin Kogyo Co., Ltd. Anticancer drugs. 4,461,760, Cl. 424-177.000.

Sugita, Masaru: *See*—
Watanabe, Kazuo; and Sugita, Masaru, 4,462,021, Cl. 340-347.0DA.

Sugiura, Noboru, to Hitachi, Ltd. Ignition timing control system for internal combustion engine. 4,461,265, Cl. 123-651.000.

Sugiura, Toshio: *See*—
Hiyoshi, Teruo; Okamoto, Eisaku; Aoki, Eiichiro; Sugiura, Toshio; and Kozuki, Koichi, 4,461,199, Cl. 84-1.190.

Suligoy, Diane; and Cook, Sharon. Pivot tip hand tool. 4,461,192, Cl. 81-177.0ST.

Sumino, Fumio: *See*—
Suzuki, Kiyoshi; and Sumino, Fumio, 4,461,753, Cl. 423-561.00B.

Sumitomo Chemical Company, Limited: *See*—
Saji, Ikutaro; Yamazaki, Hiroshi; Aono, Shunji; Ichise, Katsuaki; and Okuda, Takao, 4,461,774, Cl. 424-273.00R.
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; and Suzuki, Takatoshi, 4,461,881, Cl. 526-118.000.

Sun Chemical Corporation: *See*—
Yanutola, Michael J., 4,461,866, Cl. 524-779.000.

Sun Coast Plastics, Inc.: *See*—
Dutt, Herbert V., 4,461,393, Cl. 215-329.000.

Sun, Lilla S.: *See*—
Kaye, Wilbur I.; Sun, Lilla S.; and Anderson, John C., 4,461,718, Cl. 252-408.100.
Sun Tech, Inc.: *See*—
Moore, Robert E., 4,461,717, Cl. 252-312.000.
Sundahl, James G.: *See*—
Reiterman, Donald R.; and Sundahl, James G., 4,461,044, Cl. 2-421.000.
Sundberg, Yngve, to ASEA AB. Horizontal continuous casting of metals. 4,461,338, Cl. 164-466.000.
Sundstrand Corporation: *See*—
Myers, H. Allen, 4,461,147, Cl. 60-389.000.
Sunset Ltd.: *See*—
Guibert, Raul, 4,461,299, Cl. 128-399.000.
Superior Robotic Transporters, Inc.: *See*—
Sims, Terence B. H., 4,461,215, Cl. 104-1.00R.
Surprenant, Richard P., to General Electric Company. Composition for promoting adhesion of curable silicones to substrates. 4,461,867, Cl. 524-788.000.
Suspension Eyewear Enterprises: *See*—
Reese, Donald M.; and Reese, Ida L., 4,461,549, Cl. 351-153.000.
Sutter Biomedical, Inc.: *See*—
Christensen, James M., 4,461,300, Cl. 128-419.00F.
Sutter, Hermann, to Holzhaur und Sutter Medizin-technische Gerate und Instrumente GmbH. Forceps. 4,461,297, Cl. 128-321.000.
Sutter, Richard A. Charcoal starter-burner. 4,461,270, Cl. 126-25.00B.
Suzuki, Kiyoshi; and Sumino, Fumio, to Canon Kabushiki Kaisha. Process for producing photoconductive cadmium sulfide. 4,461,753, Cl. 423-561.00B.
Suzuki, Ryoichi: *See*—
Murakami, Hiroyasu; Uchiyama, Takashi; Suzuki, Ryoichi; Kawamura, Masaharu; Sakai, Shinji; and Momiyama, Kikuo, 4,462,025, Cl. 340-753.000.
Suzuki, Satoshi, to Hitachi, Ltd. Turbocharger control system for internal combustion engine. 4,461,149, Cl. 60-602.000.
Suzuki, Shigehiro: *See*—
Uchida, Tohru; Suzuki, Shigehiro; Yajima, Tatsuo; and Seto, Yutaka, 4,461,466, Cl. 271-22.000.
Suzuki, Shigeyoshi; Uchida, Koji; Yamada, Jun; and Senga, Takao, to Mitsubishi Paper Mills Ltd. Method for making printing plates employing an organic photo-conductive compound and a styrene-maleic anhydride half ester as a binder. 4,461,818, Cl. 430-49.000.
Suzuki, Takatoshi: *See*—
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; and Suzuki, Takatoshi, 4,461,881, Cl. 526-118.000.
Suzuki, Tomosaburo, to Kabushiki Kaisha Daisei Kikai. Dehydration apparatus. 4,461,096, Cl. 34-56.000.
Suzuki, Yutaka; Tanaka, Taro; Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; and Haseda, Satoshi, to Nippondenso Co., Ltd. Fuel injection device for Diesel engines. 4,461,170, Cl. 73-119.00A.
Sviniin, Mikhail P.: *See*—
Dmitriev, Stanislav P.; Evseev, Anatoly K.; Ivanov, Andrei S.; Komorin, Leonid V.; Nikishkin, Vladimir I.; Nuzhny, Stanislav N.; Rex, Mikhail K.; Sviniin, Mikhail P.; and Fedotov, Mikhail T., 4,461,972, Cl. 313-420.000.
Swarbrick, James, to University of Southern California. Prolonged action drug formulation. 4,461,776, Cl. 424-324.000.
Sweat, Roy W. Chiropractic instrument. 4,461,286, Cl. 128-69.000.
Swift, Wesley: *See*—
Allen, Greg; and Swift, Wesley, 4,461,344, Cl. 165-110.000.
Swiss Aluminium Ltd.: *See*—
Stanek, Oldrich; and Bloeck, Siegfried, 4,461,605, Cl. 413-8.000.
Switchcraft, Inc.: *See*—
Bailey, James R.; and Long, Eric L., 4,461,539, Cl. 350-96.210.
System Development Corporation: *See*—
Lehan, Frank W., 4,462,081, Cl. 364-554.000.
Szucs, Tamas: *See*—
Hermecz, Istvan; Meszaros, Zoltan; Breining, Tibor; Virag, Sandor; Vasvari nee Debreczy, Lelle; Horvath, Agnes; Nagy, Gabor; Mandi, Attila; Szucs, Tamas; Bitter, Istvan; and Sebestyen, Gyula, 4,461,769, Cl. 424-251.000.
Tabata, Yukio: *See*—
Kawanishi, Toshiyuki; and Tabata, Yukio, 4,461,586, Cl. 400-120.000.
Tachibana, Eiichi; Murayama, Koushou; and Isumi, Kenzo, to Dai Nippon Insatsu Kabushiki Kaisha. Method of mounting a removable printing sleeve on a core utilizing a hot melt adhesive. 4,461,663, Cl. 156-86.000.
Taguchi, Takashi: *See*—
Sato, Susumu; Hattori, Tadashi; Ueno, Yoshiki; and Taguchi, Takashi, 4,461,532, Cl. 350-1.600.
Tague, Steven A.; and Negi, Virendra S., to Honeywell Information Systems Inc. Clock system having a stall capability to enable processing of errors. 4,462,072, Cl. 364-200.000.
Tahara, Susumu; Fujii, Kozo; Nishihira, Keigo; Matsuda, Masaoki; and Mizutare, Katsuhiko, to Ube Industries, Ltd. Process for continuously preparing a diester of oxalic acid. 4,461,909, Cl. 560-193.000.
Tajima, Ikuo, to Tokai Kogyo Mishin Kabushiki Kaisha. Waiting means in an embroidering machine. 4,461,226, Cl. 112-98.000.
Takacs, Istvan: *See*—
Banos, Zoltan; Takacs, Istvan; Vereczkey, Endre; and Vigh, Dezso, 4,461,632, Cl. 55-190.000.
Takagi, Seiji, to Furukawa Electric Co., Ltd., The. Method of producing a dam for a communication cable. 4,461,736, Cl. 264-46.500.
Takagishi, Yasushi; Ohsuga, Kiichiro; and Ohama, Sadao, to Shionogi & Co., Ltd. Suppository containing sulfamethoxazole/trimethoprim complex and process for preparing the same. 4,461,765, Cl. 424-229.000.
Takahashi, Hiroshi. Portable exercise and traction apparatus. 4,461,287, Cl. 128-75.000.
Takahashi, Kenichi: *See*—
Harigane, Kotaro; Takahashi, Kenichi; Shudo, Hirokazu; and Tando, Shuichi, 4,461,610, Cl. 414-752.000.
Takakura, Masazumi: *See*—
Yamamoto, Minoru; Tanigawa, Koichiro; Kubo, Kazunori; and Takakura, Masazumi, 4,461,976, Cl. 315-100.000.
Takamatsu, Hajime, to Sony/Tektronix. Variable gain amplifier. 4,462,003, Cl. 330-254.000.
Takamatsu, Takeshi, deceased: *See*—
Tanikawa, Kowji; Matsui, Koichi; Kimura, Tetsuya; Takamatsu, Takeshi, deceased; and Takamatsu, Tokuyuki, legal representative, 4,461,558, Cl. 354-416.000.
Takamatsu, Tokuyuki, legal representative: *See*—
Tanikawa, Kowji; Matsui, Koichi; Kimura, Tetsuya; Takamatsu, Takeshi, deceased; and Takamatsu, Tokuyuki, legal representative, 4,461,558, Cl. 354-416.000.
Takamizawa, Minoru; Umemura, Mitsuo; and Kobayashi, Taishi, to Shin-Etsu Chemical Co., Ltd. Method for the preparation of methyl hydrogensilanes. 4,461,908, Cl. 556-430.000.
Takashima, Masaru. Method of gunning basic gunning refractories. 4,461,789, Cl. 427-426.000.
Takeda Chemical Industries, Ltd.: *See*—
Kawamatsu, Yutaka; and Fujita, Takeshi, 4,461,902, Cl. 548-183.000.
Minato, Ichiro; Shibata, Koichi; and Furuoya, Itsuo, 4,461,878, Cl. 525-504.000.
Takei, Akira: *See*—
Miida, Takashi; Hika, Yoshihiko; and Takei, Akira, 4,462,089, Cl. 365-185.000.
Takeuchi, Seiji: *See*—
Fell, Donald R.; and Takeuchi, Seiji, 4,461,402, Cl. 222-105.000.
Takeuchi, Yasumasa; Sakakibara, Mitsuhiko; and Shibata, Tooru, to Japan Synthetic Rubber Co., Ltd. Process for producing conjugated diene polymer using a solubilized lanthanum carboxylate catalyst. 4,461,883, Cl. 526-139.000.
Tamaki, Hiroshi: *See*—
Mizushima, Nobuyuki; Murata, Kyohei; Tamaki, Hiroshi; Hayashi, Junichi; and Ohkubo, Fujio, 4,461,462, Cl. 266-117.000.
Tanaka, Atsuo, to Yamauchi Rubber Industry Co., Ltd. Press pad for forming press. 4,461,800, Cl. 428-217.000.
Tanaka, Hiroshige, to Nihon Sekiyu Hanbai Kabushiki Kaisha. Apparatus for storing heavy hydrocarbon oil and vessel therefor. 4,461,599, Cl. 405-210.000.
Tanaka, Kazuhiko, to Nippon Thompson Company, Ltd. Sliding roller bearing. 4,461,518, Cl. 308-6.00C.
Tanaka, Taro: *See*—
Suzuki, Yutaka; Tanaka, Taro; Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; and Haseda, Satoshi, 4,461,170, Cl. 73-119.00A.
Tando, Shuichi: *See*—
Harigane, Kotaro; Takahashi, Kenichi; Shudo, Hirokazu; and Tando, Shuichi, 4,461,610, Cl. 414-752.000.
Tanigawa, Koichiro: *See*—
Yamamoto, Minoru; Tanigawa, Koichiro; Kubo, Kazunori; and Takakura, Masazumi, 4,461,976, Cl. 315-100.000.
Tanikawa, Kowji; Matsui, Koichi; Kimura, Tetsuya; Takamatsu, Takeshi, deceased; and by Takamatsu, Tokuyuki, legal representative, to Olympus Optical Co., Ltd. Endoscopic photographing apparatus. 4,461,558, Cl. 354-416.000.
Tano, Kazuhiro: *See*—
Higuchi, Seizun; Kamada, Minoru; Tano, Kazuhiro; Fushino, Tetsuo; and Fujinaga, Minoru, 4,461,679, Cl. 204-27.000.
Tansei, Hikaru; Kajimoto, Katsuhiko; and Nomata, Mikio, to Bridgestone Tire Company Limited. Heavy duty pneumatic tires. 4,461,334, Cl. 152-209.00R.
Tartaglia, Paul. Automobile bicycle carrying rack. 4,461,410, Cl. 224-42.03B.
Tashoh, Masao: *See*—
Yaotani, Kouichi; and Tashoh, Masao, 4,461,509, Cl. 296-214.000.
Tauk, Harry L.; and Genco, Louis V., to United States of America, Air Force. Method for dynamically recording distortion in a transparency. 4,461,570, Cl. 356-239.000.
Taylor Freezer Company: *See*—
Adamson, Lee E., 4,461,405, Cl. 222-201.000.
Taylor, Peter J.: *See*—
Matthews, Robert B.; Taylor, Peter J.; and Dallimore, Keith J., 4,461,678, Cl. 204-9.000.
Taylor, Wilson E.: *See*—
Miller, Jr., Warren H.; and Taylor, Wilson E., 4,461,575, Cl. 356-386.000.
TDK Corporation: *See*—
Harigane, Kotaro; Takahashi, Kenichi; Shudo, Hirokazu; and Tando, Shuichi, 4,461,610, Cl. 414-752.000.
Team Winsor: *See*—
Pook, Peter D.; and Girsch, Charles W., 4,461,438, Cl. 244-153.00R.
Technigaz: *See*—
Argy, Gilles, 4,461,398, Cl. 220-422.000.
Tecumseh Products Company: *See*—
Hannibal, Billy B.; Wise, Kennard L.; and Jacoby, Thomas A., 4,461,446, Cl. 248-634.000.

Teijin Limited: *See*—
Adachi, Tomio; Katoh, Hideo; and Yamamoto, Atsushi, 4,461,797, Cl. 428-147.000.
Teledyne Industries, Inc.: *See*—
McGhee, James B., 4,461,524, Cl. 339-75.0MP.
Telford, Thomas M., to Warn Industries, Inc. Winch. 4,461,460, Cl. 254-344.000.
Tennessee Valley Authority: *See*—
Lewis, Harry T.; and Dillard, Ewell F., 4,461,913, Cl. 564-063.000.
Tennichi, Yasuhiro; and Honda, Naganobu, to Hitachi, Ltd. Control apparatus for steam turbine. 4,461,152, Cl. 60-660.000.
Terada, Atsusuke; Naruto, Shunji; and Misaka, Eiichi, to Sankyo Company Limited. Phenylacetic acid derivatives, their preparation and compositions containing them. 4,461,912, Cl. 562-468.000.
Terumo Kabushiki Kaisha: *See*—
Murase, Masakazu, 4,461,584, Cl. 374-188.000.
TESLA, koncernovy podnik: *See*—
Janda, Jiri; Burdych, Jiri; Lab, Miroslav; and Diabal, Pavel, 4,462,097, Cl. 369-248.000.
Tesler, Tzipora: *See*—
Carmi, Mordechay; Nur, Benjamin; and Tesler, Tzipora, 4,461,140, Cl. 56-50.000.
Tetra Pak International AB: *See*—
Pupp, Herwig, 4,461,667, Cl. 156-244.110.
Tex-Fab, Inc.: *See*—
Wiley, Thomas W.; and Joyce, William R., 4,461,431, Cl. 242-57.100.
Texas Instruments Incorporated: *See*—
Lloyd, William W., 4,462,027, Cl. 340-784.000.
Musser, Mary E., 4,461,672, Cl. 156-644.000.
Texticon: *See*—
Guenther, John L., 4,461,935, Cl. 200-5.00R.
Teyssie, Philippe; Jeome, Robert; Ouhadi, Trazollah; and Fayt, Roger, to Coaden Technology, Inc. Block copolymers of conjugated dienes or vinyl substituted aromatic hydrocarbons and acrylic esters and process for their manufacture. 4,461,874, Cl. 525-271.000.
Thayer, William L.; Bennett, Adam J.; Kutowy, Oleh; and Sourirajan, Srinivasa, to Canadian Patents & Development Limited. Ultrafiltration and reverse osmosis tubular membrane module. 4,461,707, Cl. 210-321.100.
Thebault, Claude, to Kis France. Frame for transparencies. 4,461,105, Cl. 40-152.000.
Theurer, Josef; and Riessberger, Klaus, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile machine for removing surface irregularities from rail heads. 4,461,604, Cl. 409-296.000.
Thiele, Alfred W.; McLain, Robert E.; Martinez, Modesto T., Jr.; Lewis, Richard C.; and Kim, Michael S., to Rockwell International Corporation. Automatic calibration system for ultrasonic inspection. 4,462,082, Cl. 364-571.000.
Thomas & Betts Corporation: *See*—
Izraeli, Hyman, 4,461,527, Cl. 339-97.00R.
Thomas, Jacob E.: *See*—
Bangs, Richard G.; and Thomas, Jacob E., 4,462,037, Cl. 346-140.00R.
Thomason, Robert L.; and Stover, Henry S., to Spacegraph, Ltd. Timing system for a three dimensional vibrating mirror display. 4,462,044, Cl. 358-89.000.
Thomson-CSF: *See*—
Reymond, Jean C.; and Brisseau, Christian, 4,462,042, Cl. 358-22.000.
Thone, Ludger: *See*—
Koschinek, Gunter; Wandel, Dietmar; and Thone, Ludger, 4,461,740, Cl. 264-210.800.
Thorn, Frank H., deceased (by Dalrymple, Betty H., executor), to Phillips Petroleum Company. Processing acid gases. 4,461,749, Cl. 423-228.000.
Thornton, David C., to American Sterilizer Company. Aerator. 4,461,097, Cl. 34-233.000.
Thouret, Wolfgang E.: *See*—
Kaufman, Rudolph; and Thouret, Wolfgang E., 4,461,973, Cl. 315-56.000.
Thyssen Industrie AG: *See*—
Girod, Hanjochen; and Korn, Gerhard, 4,461,217, Cl. 105-135.000.
Tiebout, Robert H. Method and apparatus for automatically stirring insulin. 4,461,578, Cl. 366-213.000.
Tioxide Group Plc.: *See*—
Lawson, Edmund J.; and Waterfield, Charles G., 4,461,848, Cl. 521-64.000.
Toge, Hiroaki; Esaka, Shinichi; Murakami, Yutaka; and Murao, Toshiaki, to Nippondenso Co., Ltd. Heat exchanger. 4,461,348, Cl. 165-173.000.
Toia, Emilio: *See*—
Omodei-Sale, Amedeo; and Toia, Emilio, 4,461,894, Cl. 544-370.000.
Tokai Kogyo Mishin Kabushiki Kaisha: *See*—
Tajima, Ikuo, 4,461,226, Cl. 112-98.000.
Token, Kenneth H.; and Garner, Edward C., to McDonnell Douglas Corporation. Plated heat pipe. 4,461,343, Cl. 165-104.260.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Fukuda, Norisuke; and Miyazawa, Susumu, 4,461,941, Cl. 219-10.55B.
Iizuka, Hisakazu, 4,462,090, Cl. 365-185.000.
Inoue, Masaharu, 4,461,615, Cl. 431-76.000.
Kato, Tiharu; Nakamura, Hatsuo; Koguchi, Shigeo; Yonezawa, Toshio; and Abe, Toshihiro, 4,461,825, Cl. 430-273.000.
Kusakabe, Hiromi; and Yoshida, Yoshihiro, 4,462,005, Cl. 330-288.000.
Ozawa, Tamotsu, 4,461,650, Cl. 134-1.000.
Shiotari, Yoshihisa, 4,461,964, Cl. 307-362.000.
Shirogami, Tamotsu; and Ueno, Mitsushi, 4,461,813, Cl. 429-34.000.
Tolco Incorporated: *See*—
Heath, Richard W., 4,461,440, Cl. 248-59.000.
Toray Industries, Inc.: *See*—
Kometani, Kiichi; Yamamoto, Yoshiyuki; and Yanagi, Masana, 4,461,871, Cl. 525-166.000.
Tournier, Edmond: *See*—
Allemand, Robert; Gagelin, Jean-Jacques; and Tournier, Edmond, 4,461,953, Cl. 250-374.000.
Toyo Denki Seizo Kabushiki Kaisha: *See*—
Iida, Katsuji, 4,462,070, Cl. 363-28.000.
Toyo Soda Manufacturing Co., Ltd.: *See*—
Itabashi, Keiji; Morishita, Satoru; and Hatotani, Hisashi, 4,461,631, Cl. 55-66.000.
Toyo, Tanso Co., Ltd.: *See*—
Ikeda, Shigeru; Hori, Shozi; Eguchi, Kiyohisa; Matsuo, Kanji; Zaima, Hidenori; Gamada, Yoshifumi; and Kondo, Teruhisa, 4,461,806, Cl. 428-408.000.
Toyota Jidosha Kabushiki Kaisha: *See*—
Kobashi, Mamoru; and Ito, Hiroshi, 4,461,253, Cl. 123-339.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Osaki, Hichiro; and Hayashi, Kazumi, 4,461,975, Cl. 315-82.000.
Tracy, Steven E.: *See*—
Mills, Charles J.; and Tracy, Steven E., 4,461,455, Cl. 254-3.00R.
Tregonning, Geoffrey R., to Westinghouse Brake and Signal Co. Ltd. Piston rod scraper and breather assembly. 4,461,486, Cl. 277-24.000.
Tremblay, Bernard A.: *See*—
Knapp, Harold M.; and Tremblay, Bernard A., 4,462,017, Cl. 336-207.000.
Treuner, Uwe D.: *See*—
Breuer, Hermann; Treuner, Uwe D.; and Denzel, Theodor, 4,461,767, Cl. 424-246.000.
Trotti, Pasqualle: *See*—
Calkin, Carston R.; and Trotti, Pasqualle, 4,461,104, Cl. 36-132.000.
Troxler, Eduard: *See*—
Meier, Anton; and Troxler, Eduard, 4,461,898, Cl. 546-188.000.
Trumpf, Hans: *See*—
Zerrer, Gerhard; and Trumpf, Hans, 4,461,055, Cl. 15-344.000.
TRW Inc.: *See*—
Miller, Chauncey S., 4,462,108, Cl. 375-97.000.
Tschang, Chung-Ji; Klefenz, Heinrich; Sanner, Axel; and Zahn, Wolfgang, to BASF Aktiengesellschaft. Preparation of an enzymatically active formulation embedded in silica gel. 4,461,832, Cl. 435-176.000.
Tsuchiya, Yutaka, to Hamamatsu TV Co., Ltd. Instrument for measuring light emission induced by repetitive stimulation of the same type. 4,461,572, Cl. 356-318.000.
Tsukiji, Kensuke; and Yamazaki, Yukiho, to Honda Giken Kogyo Kabushiki Kaisha. Body frame with a liquid tank secured integrally thereto for a motorcycle. 4,461,489, Cl. 280-5.00A.
Tsuzuki, Yoshihiko: *See*—
Suzuki, Yutaka; Tanaka, Taro; Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; and Haseda, Satoshi, 4,461,170, Cl. 73-119.00A.
Tuccio, Sam A.; and Heller, Donald F., to Allied Corporation. Sequential multiphoton excitation method. 4,461,686, Cl. 204-157.10R.
Tudek, Arthur L. Billiard table with center hole and sliding pocket doors for various games of billiards, golf and the like. 4,461,476, Cl. 273-3.00R.
Tupikov, Grigory A.: *See*—
Sirotin, Jury G.; Nikolaev, Stanislav V.; Gelfand, Lazar M.; Romanov, Pavel D.; Potapov, Valentin D.; Alexeev, Mikhail S.; Volkov, Evgeny A.; Yalevsky, Vladlen D.; Lukienko, Viktor G.; Popov, Anatoly G.; and Tupikov, Grigory A., 4,461,512, Cl. 299-42.000.
Turner, Bernus G., to Boeing Company, The. Integral hydraulic blocking and relief valve. 4,461,449, Cl. 251-62.000.
Turner, Robert L.; and Jennings, Robert E., to RCA Corporation. Rack for transporting recorded discs. 4,461,386, Cl. 211-41.000.
Turner, S. Richard: *See*—
Peiffer, Dennis G.; Lundberg, Robert D.; and Turner, S. Richard, 4,461,884, Cl. 526-240.000.
Ube Industries, Ltd.: *See*—
Tahara, Susumu; Fujii, Kozo; Nishihira, Keigo; Matsuda, Masaoki; and Mizutare, Katsuhiko, 4,461,909, Cl. 560-193.000.
Uchida, Koji: *See*—
Suzuki, Shigeyoshi; Uchida, Koji; Yamada, Jun; and Senga, Takao, 4,461,818, Cl. 430-49.000.
Uchida, Takeshi. Metal-reinfored synthetic wood material. 4,461,798, Cl. 428-160.000.
Uchida, Tohru; Suzuki, Shigehiro; Yajima, Tatsuo; and Seto, Yutaka, to Konishiroku Photo Industry Co., Ltd. Paper feeding device for recording apparatus. 4,461,466, Cl. 271-22.000.
Uchiyama, Takashi: *See*—
Murakami, Hiroyasu; Uchiyama, Takashi; Suzuki, Ryoichi; Kawamura, Masaharu; Sakai, Shinji; and Momiyama, Kikuo, 4,462,025, Cl. 340-753.000.
Ueda, Hiroshi; and Oyokota, Shigeru, to Minolta Camera Kabushiki Kaisha. Electromagnetic device with dust-tight enclosure. 4,462,013, Cl. 335-229.000.
Ueno, Mitsushi: *See*—
Shirogami, Tamotsu; and Ueno, Mitsushi, 4,461,813, Cl. 429-34.000.

Ueno, Yoshiki: *See*—
Sato, Susumu; Hattori, Tadashi; Ueno, Yoshiki; and Taguchi, Takashi, 4,461,532, Cl. 350-1.600.
Umemura, Mitsuo: *See*—
Takamizawa, Minoru; Umemura, Mitsuo; and Kobayashi, Taishi, 4,461,908, Cl. 556-430.000.
Umezawa, Mitsuo, to Fuji Jukogyo Kabushiki Kaisha. System for controlling an electro-magnetic clutch for automobiles. 4,461,374, Cl. 192-21.500.
Umphrey, Ronald W.: *See*—
Jones, Emrys H., Jr.; and Umphrey, Ronald W., 4,461,359, Cl. 175-61.000.
Unger, Dieter: *See*—
Knabe, Uwe; and Unger, Dieter, 4,461,329, Cl. 141-150.000.
Unger, Henry M. Handle bar formed as telescopic tube. 4,461,057, Cl. 16-114.00R.
Union Carbide Corporation: *See*—
Anthony, John, 4,461,792, Cl. 428-35.000.
Cassidy, Robert T.; and Doshi, Kishore J., 4,461,630, Cl. 55-25.000.
Jones, David N.; Haapala, Urho S.; and Scarola, Leonard S., 4,461,734, Cl. 264-176.00R.
Rana, Mahendrasinh D.; and Selines, Ronald J., 4,461,657, Cl. 148-36.000.
Reichle, Walter T.; and Conte, Louis B., Jr., 4,461,893, Cl. 544-215.000.
Union Oil Company of California: *See*—
Deering, Roland F.; Dhondt, Roland O., deceased; and Hines, John E., 4,461,673, Cl. 201-1.000.
Union Special Corporation: *See*—
Abrams, Jack S., 4,461,227, Cl. 112-121.150.
Uniroyal, Inc.: *See*—
Crepeau, Allen E., 4,461,875, Cl. 525-348.000.
Gay, Walter A.; and Dietrick, Robert F., 4,461,918, Cl. 568-938.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Field, Stephen P., 4,461,144, Cl. 60-203.100.
Phillips, Leslie N., 4,461,855, Cl. 523-222.000.
United States Filter Fluid Systems Corporation: *See*—
O'Cheskey, Theodore H.; and Edwards, Hugh T., Jr., 4,461,945, Cl. 219-121.0LC.
United States of America
Agriculture: *See*—
Kent, Albert C.; and Rosen, Howard N., 4,461,167, Cl. 73-29.000.
Air Force: *See*—
Bezdek, Thomas G., 4,461,955, Cl. 250-551.000.
Rockenfeller, John D., 4,461,756, Cl. 423-579.000.
Salour, Michael M.; Roxlo, Charles B.; and Bebelaar, Dick, 4,462,103, Cl. 372-35.000.
Shaw, Herbert J.; and Arditty, Herve J., 4,461,574, Cl. 356-350.000.
Stephens, Frederick D., 4,461,145, Cl. 60-226.300.
Task, Harry L.; and Genco, Louis V., 4,461,570, Cl. 356-239.000.
Army: *See*—
Duthie, Joseph G. M., 4,461,541, Cl. 350-132.000.
Lee, Richard A., 4,461,516, Cl. 305-38.000.
Commerce: *See*—
Lashmore, David S., 4,461,680, Cl. 204-41.000.
Energy: *See*—
Bowman, Gary K., 4,461,126, Cl. 51-313.000.
Frank, Arthur J., 4,461,691, Cl. 204-242.000.
Hundal, Rolv; Kessinger, Boyd A.; and Parlak, Edward A., 4,461,317, Cl. 137-565.000.
Navy: *See*—
Black, William L., 4,461,214, Cl. 102-440.000.
Chess, Daniel L.; and White, William B., 4,461,750, Cl. 423-263.000.
Doerr, Joseph E.; and Bozack, Tomas J., 4,461,553, Cl. 352-39.000.
DuBell, Thomas L., 4,461,146, Cl. 60-261.000.
Katan, Theodore; and Carlen, Pamela J., 4,461,677, Cl. 204-2.100.
Pierpoint, William; and Weeks, Dan M., 4,461,977, Cl. 315-159.000.
U.S. Philips Corporation: *See*—
Blok, Huibert, 4,462,071, Cl. 363-44.000.
Chiecchi, Cesare, 4,461,069, Cl. 29-564.800.
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Yang, Henry W., to B. F. Goodrich Company, The. Process for making low fusion dispersion resins. 4,461,869, Cl. 525-80.000.
Yang, Maurice; and Mounteer, Carlyle A., to Gulton Industries, Inc. Semiconductor strain gauge with integral compensation resistors. 4,462,018, Cl. 338-3.000.
Yanutola, Michael J., to Sun Chemical Corporation. Preparation of water-in-oil emulsions. 4,461,866, Cl. 524-779.000.
Yaotani, Kouichi; and Tashoh, Masao, to Nissan Motor Company, Limited. Roof structure. 4,461,509, Cl. 296-214.000.
Yaskawa Electric Mfg. Co., Ltd.: *See*—
Kimura, Kaoru; and Nakano, Mitsuyoshi, 4,461,936, Cl. 200-61.410.
Yasuda, Yutaka; Hirata, Yasuo; and Ogawa, Akira, to Kokusai Denshin Denwa Co., Ltd. Maximum likelihood error correcting technique. 4,462,101, Cl. 371-43.000.
Yasunaga, Soichiro. High speed switching circuit. 4,461,960, Cl. 307-243.000.
Yogev, Amnon; and Mahlab, David, to Ormat Turbines Ltd. Aqueous gel for heat storage pond and method for making the gel. 4,461,276, Cl. 126-415.000.
Yokotsuka, Akio, to Kino Precision Industries, Ltd. Zoom lens locking system. 4,461,545, Cl. 350-429.000.
Yokoyama, Hiroshi; Kuge, Toshio; Nogita, Shunsuke; and Nakamura, Yoichi, to Hitachi, Ltd. Upgrading method of law-rank coal. 4,461,627, Cl. 44-23.000.
Yokoyama, Koji: *See*—
Yamagami, Kikuo; and Yokoyama, Koji, 4,462,059, Cl. 361-149.000.
Yoneda, Yoshihide, to Maruzen Sewing Machine Co., Ltd. Sewing machine frame construction. 4,461,228, Cl. 112-259.000.
Yonezawa, Toshio: *See*—
Kato, Tiharu; Nakamura, Hatsuo; Koguchi, Shigeo; Yonezawa, Toshio; and Abe, Toshihiro, 4,461,825, Cl. 430-273.000.
York, Billie M., Jr., to Alcon Laboratories, Inc. 2-(Trisubstituted phenylimino)-imidazolines. 4,461,904, Cl. 548-315.000.
York, Harold L., to Bell Telephone Laboratories, Incorporated. Trace facility for use in multiprocessing environment. 4,462,077, Cl. 364-300.000.
Yoshida, Yoshihiro: *See*—
Kusakabe, Hiromi; and Yoshida, Yoshihiro, 4,462,005, Cl. 330-288.000.
Yoshii, Yasuo: *See*—
Maeda, Tetsuro; Yoshii, Yasuo; Okamoto, Akihiro; and Nishinakagawa, Isamu, 4,461,865, Cl. 524-440.000.
Yoshino, Tsunemi; Iwata, Hiroshi; Kashihara, Toshitsugu; and Morioka, Akitoshi, to West Electric Co., Ltd. Photographic information display device. 4,461,560, Cl. 354-475.000.

Young, Chi C.; and De Maria, Francesco, to American Cyanamid Company. Continuous liquid phase process for melt spinning acrylonitrile polymer. 4,461,739, Cl. 264-176.00F.

Young, David A. B.: *See*—
Batchelor, John F.; Bauer, Denis J.; Hodson, Harold F.; Selway, John W. T.; and Young, David A. B., 4,461,907, Cl. 549-406.000.

Young, Lewis B., to Mobil Oil Corporation. Method for the selective preparation of secondary alcohols and derivatives thereof. 4,461,729, Cl. 260-459.00R.

Young, Lewis B., to Mobil Oil Corporation. Method for the selective preparation of secondary alcohols and derivatives thereof. 4,461,730, Cl. 260-459.00R.

Young, Robert D.: *See*—
Daley, William D.; and Young, Robert D., 4,461,755, Cl. 423-573.00G.

Zahn, Wolfgang: *See*—
Tschang, Chung-Ji; Klefenz, Heinrich; Sanner, Axel; and Zahn, Wolfgang, 4,461,832, Cl. 435-176.000.

Zaima, Hidenori: *See*—
Ikeda, Shigeru; Hori, Shozi; Eguchi, Kiyohisa; Matsuo, Kanji; Zaima, Hidenori; Gamada, Yoshifumi; and Kondo, Teruhisa, 4,461,806, Cl. 428-408.000.

Zelinger, Jiri: *See*—
Hudecek, Slavko; Hnidek, Jaroslav; Heidingsfeld, Viktor; Kolarik, Jan; and Zelinger, Jiri, 4,461,847, Cl. 521-27.000.

Zenith Electronics Corporation: *See*—
Strammello, Peter, 4,462,010, Cl. 333-126.000.

Zerrer, Gerhard; and Trumpf, Hans, to Stihl, Andreas. Portable sweeping device. 4,461,055, Cl. 15-344.000.

Zettl, Otto. Milling cutter. 4,461,602, Cl. 407-40.000.

Zhed, Viktor P.: *See*—
Gavrilov, Alexei G.; Galitskaya, Galina K.; Zhed, Viktor P.; Sinelschikov, Andrei K.; Padalka, Valentin G.; Boyarunas, Albert M.; Panin, Vyacheslav N.; and Barinov, Vitaly N., 4,461,799, Cl. 428-210.000.

Ziegler, Alfred, to Siemens Aktiengesellschaft. Switching apparatus for devices for alternating current parallel remote feed. 4,462,058, Cl. 361-62.000.

Ziehn, Klaus-Dieter, to H.F. & Ph.F. Reemtsma GmbH & Co. Process for improving the filling capacity of tobaccos. 4,461,310, Cl. 131-296.000.

Zimmerman, William T.: *See*—
Levitt, George; and Zimmerman, William T., 4,461,640, Cl. 71-92.000.

Zinno, Clarence H. Self-propelled wheelchair vehicle. 4,461,609, Cl. 414-495.000.

Zollner, Dieter; Lauterbach-Dammler, Inge; Rittman, Friedrich; and Schieber, Franz, to Arc Technologies Systems, Ltd. Electrode holder for electric arc furnaces. 4,462,104, Cl. 373-93.000.

Zupko, William P.: *See*—
Kuzyk, Roman; and Zupko, William P., 4,461,555, Cl. 354-299.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF JULY, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Broitman, Kalman: *See*—
Smith, Lawther O.; Howard, Timothy L.; and Broitman, Kalman, Re. 31,635, Cl. 403-144.000.

Eaton Corporation: *See*—
Norby, Thomas E., Re. 31,634, Cl. 200-72.00R.

Gas Spring Corporation: *See*—
Smith, Lawther O.; Howard, Timothy L.; and Broitman, Kalman, Re. 31,635, Cl. 403-144.000.

Howard, Timothy L.: *See*—
Smith, Lawther O.; Howard, Timothy L.; and Broitman, Kalman, Re. 31,635, Cl. 403-144.000.

Lewis, Donald C. Lumber conditioning kiln. Re. 31,633, Cl. 34-13.800.

Norby, Thomas E., to Eaton Corporation. Alternately-operable two-pushbutton switch. Re. 31,634, Cl. 200-72.00R.

Smith, Lawther O.; Howard, Timothy L.; and Broitman, Kalman, to Gas Spring Corporation. Socket assembly for a ball and socket coupling. Re. 31,635, Cl. 403-144.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Andersen, Kare: *See*—
Christiansen, Keith W.; and Andersen, Kare, B1 3,936,257, Cl. 425-125.000.

Burlington Industries, Inc.: *See*—
London, Joe F., Jr.; and Lauber, Jean-Louis, B1 3,972,174, Cl. 57-208.000.

Campbell, Barry, to R. A. Pearson Company. Holder assembly for case packing machine. B1 4,300,325, 7-24-84, Cl. 53-143.000.

Chicago Rawhide Manufacturing Company: *See*—
Christiansen, Keith W.; and Andersen, Kare, B1 3,936,257, Cl. 425-125.000.

Christiansen, Keith W.; and Andersen, Kare, to Chicago Rawhide Manufacturing Company. Closed stroke molding. B1 3,936,257, 7-24-84, Cl. 425-125.000.

Duceppe, Antoine, to Revelations Antoine Ltee. Fingernail treating device. B1 4,282,891, 7-24-84, Cl. 132-73.500.

Lauber, Jean-Louis: *See*—
London, Joe F., Jr.; and Lauber, Jean-Louis, B1 3,972,174, Cl. 57-208.000.

London, Joe F., Jr.; and Lauber, Jean-Louis, to Burlington Industries, Inc. Textured yarn and fabric. B1 3,972,174, 7-24-84, Cl. 57-208.000.

Nederlandse Naaldenfabriek Muva B.V.: *See*—
Paganoni, Cesare, B1 4,186,073, Cl. 206-380.000.

Paganoni, Cesare, to Nederlandse Naaldenfabriek Muva B.V. Package for sewing machine needles or the like. B1 4,186,073, 7-24-84, Cl. 206-380.000.

Philpot, Van B., Jr. Method of blood viscosity determination. B1 3,999,538, 7-24-84, Cl. 128-637.000.

R. A. Pearson Company: *See*—
Campbell, Barry, B1 4,300,325, Cl. 53-143.000.

Revelations Antoine Ltee: *See*—
Duceppe, Antoine, B1 4,282,891, Cl. 132-73.500.

Rhone-Poulenc Agrochemie: *See*—
Theissen, Robert J., B1 3,652,645, Cl. 560-21.000.

Theissen, Robert J., to Rhone-Poulenc Agrochemie. Halophenoxy benzoic acid herbicides. B1 3,652,645, 7-24-84, Cl. 560-21.000.

LIST OF DESIGN PATENTEES

Allen, James H., to 'totes', incorporated. Umbrella handle. 274,765, 7-24-84, Cl. D3-12.000.

Allen, James H., to 'totes', incorporated. Umbrella handle. 274,766, 7-24-84, Cl. D3-12.000.

Allpress, Arthur W. D., to Clinicomb Limited. Comb. 274,847, 7-24-84, Cl. D28-21.000.

Ambasz, Emilio; and Piretti, Giancarlo, to Center for Design Research and Development NV. Chair. 274,771, 7-24-84, Cl. D6-375.000.

Angiolini, Enzo, to Marx & Newman Company. Lady's shoe or similar article. 274,764, 7-24-84, Cl. D2-294.000.

Associated Auditory Instruments, Inc.: *See*—
Libby, E. Robert, 274,839, Cl. D24-35.000.

Axia Incorporated: *See*—
Simonsen, Robert J., 274,788, Cl. D8-375.000.

Baker, Dennis K.; and Schwochert, Harold W. Cake pan. 274,781, 7-24-84, Cl. D7-359.000.

Bankier, Jack O. Exercise bar or similar article. 274,829, 7-24-84, Cl. D21-198.000.

Bard, Claude; Ricquet, Joel; and Rolland, Etienne, to Compagnie Generale des Etablissements Michelin. Tire. 274,804, 7-24-84, Cl. D12-146.000.

Beechuk, Timothy J.: *See*—
Reece, John S.; Beechuk, Timothy J.; and O'Neil, William J., Jr., 274,778, Cl. D7-104.000.

Beeley, Michael G.: *See*—
Griffin, John; Thompson, James A.; and Beeley, Michael G., 274,801, Cl. D12-7.000.

Belloff, Frederick. Stunt kite. 274,827, 7-24-84, Cl. D21-88.000.

Berry, Fred M.; and Perlmutter, Leonard L., to International Medical Electronics, Ltd. Diathermy applicator head. 274,840, 7-24-84, Cl. D24-68.000.

Bixler, Kenneth D.; Lord, Henry A.; and Reifers, Richard F., to Diamond International Corporation. Egg carton. 274,790, 7-24-84, Cl. D9-345.000.

Bouman, Mark H., to Century Mfg. Co. Welding machine. 274,819, 7-24-84, Cl. D15-144.000.

Brentini, Attilio. Display unit. 274,774, 7-24-84, Cl. D6-483.000.

Brown, Robert G.; Joice, Joe; and Pardo, John, to Olin Corporation. Packaging container for ammunition. 274,789, 7-24-84, Cl. D9-341.000.

Brush, John D.; and Carpenter, Britt C., to John D. Brush & Co., Inc. Combined locking panel and security box. 274,858, 7-24-84, Cl. D99-28.000.

Cable Electric Products, Inc.: *See*—
Schwartz, Frederic W., 274,808, Cl. D13-30.000.

Carlson, Julius; and Deschamps, Robert L., to Shure Brothers, Inc. Phonograph cartridge. 274,811, 7-24-84, Cl. D14-28.000.

Carlson, Julius; and Deschamps, Robert L., to Shure Brothers, Inc. Phonograph stylus. 274,812, 7-24-84, Cl. D14-29.000.

Carpenter, Britt C.: *See*—
Brush, John D.; and Carpenter, Britt C., 274,858, Cl. D99-28.000.

Center for Design Research and Development NV: *See*—
Ambasz, Emilio; and Piretti, Giancarlo, 274,771, Cl. D6-375.000.

Century Mfg. Co.: *See*—
Bouman, Mark H., 274,819, Cl. D15-144.000.

Chevassus, Alain, to Lefebure Isolants Reunis. Cosmetic pot. 274,848, 7-24-84, Cl. D28-76.000.

Cleary, James D., to Figgie International Inc. Gas filter container for a respirator. 274,849, 7-24-84, Cl. D29-7.000.

Clinicomb Limited: *See*—
Allpress, Arthur W. D., 274,847, Cl. D28-21.000.

Coats & Clark, Inc.: *See*—
Giliotti, Emil, 274,800, Cl. D11-164.000.

Coleman, Gerald A. Rack for quilts, blankets and spreads. 274,773, 7-24-84, Cl. D6-553.000.

Compagnie Generale des Etablissements Michelin: *See*—
Bard, Claude; Ricquet, Joel; and Rolland, Etienne, 274,804, Cl. D12-146.000.
Dalmas, Marcel, 274,805, Cl. D12-146.000.
Epinat, Michel, 274,806, Cl. D12-151.000.

Container Engineering (Ireland) Limited: *See*—
Fossey, Robin E.; and McKenna, Ian P. J., 274,802, Cl. D12-97.000.

Continental Plastics Company: *See*—
Freeman, Bruce A., 274,791, Cl. D9-352.000.
Freeman, Bruce A., 274,793, Cl. D9-447.000.

Corey, Edward G., to Park Homes, Inc. Trailer carriable house. 274,844, 7-24-84, Cl. D25-22.000.

Corning Glass Works: *See*—
Dair, Thomas M.; Stowell, Davin B.; and Viemeister, Tucker L., 274,821, Cl. D16-118.000.

CPG Products Corp.: *See*—
Pelavin, Joseph Y.; and Stolarz, Edward M., 274,784, Cl. D8-306.000.

Cronce, Richard W. Bracket for a ventilation fan. 274,787, 7-24-84, Cl. D8-373.000.

da Gloria Germano, Maria. Kite reel spool. 274,785, 7-24-84, Cl. D8-359.000.

Dair, Thomas M.; Stowell, Davin B.; and Viemeister, Tucker L., to Corning Glass Works. Eyeglass frame or the like. 274,821, 7-24-84, Cl. D16-118.000.

Daiwa Seiko, Inc.: *See*—
Sugimoto, Tatsuo, 274,832, Cl. D22-25.000.

Dalmas, Marcel, to Compagnie Generale des Etablissements Michelin. Tire. 274,805, 7-24-84, Cl. D12-146.000.

Dart Industries Inc.: *See*—
Wolff, Martin J., 274,777, Cl. D7-104.000.

Deschamps, Robert L.: *See*—
Carlson, Julius; and Deschamps, Robert L., 274,811, Cl. D14-28.000.
Carlson, Julius; and Deschamps, Robert L., 274,812, Cl. D14-29.000.
Jones, John C.; and Deschamps, Robert L., 274,810, Cl. D14-28.000.
Jones, John C.; and Deschamps, Robert L., 274,813, Cl. D14-29.000.

Design Dimensions, Ltd.: *See*—
O'Hara, Gary J.; and Madlener, Evelyn S., 274,798, Cl. D14-106.000.

de Vos, Hendrik A. J., to GTE Products Corporation. Fixture hanger member. 274,786, 7-24-84, Cl. D8-373.000.

Diamond International Corporation: *See*—
Bixler, Kenneth D.; Lord, Henry A.; and Reifers, Richard F., 274,790, Cl. D9-345.000.

Duskin Franchise Kabushiki Kaisha: *See*—
Nishiyama, Masanobu; Kanazawa, Fusao; Tanaka, Hisaji; and Nishimura, Tatsuo, 274,854, Cl. D32-50.000.
Nishiyama, Masanobu; Kanazawa, Fusao; Tanaka, Hisaji; and Nishimura, Tatsuo, 274,855, Cl. D32-50.000.

Ehrler, Arthur J.; and Roser, Carl A., to Roser, Carl A. Lawn mower rotor support housing for cutting elements or the like. 274,815, 7-24-84, Cl. D15-17.000.

Eoga, Anthony B. J., to Warner-Lambert Company. Pharmaceutical tablet. 274,846, 7-24-84, Cl. D28-2.000.

Epinat, Michel, to Compagnie Generale des Etablissements Michelin. Tire. 274,806, 7-24-84, Cl. D12-151.000.

Evans, Roger C. Foot support for physical exerciser. 274,828, 7-24-84, Cl. D21-191.000.

Falcon Safety Products, Inc.: *See*—
Witte, Paul A., 274,794, Cl. D9-448.000.

Fields, Ora K.: *See*—
Smith, William H.; and Fields, Ora K., 274,856, Cl. D32-50.000.

Figgie International Inc.: *See*—
Cleary, James D., 274,849, Cl. D29-7.000.

Fineo, Carlo: *See*—
Withers, Leland A., Sr.; Withers, L. Andrew, Jr.; Withers, Jean D.; and Fineo, Carlo, 274,852, Cl. D32-25.000.
Withers, Leland A., Sr.; Withers, L. Andrew, Jr.; Withers, Jean D.; and Fineo, Carlo, 274,853, Cl. D32-25.000.

Fleming, Thomas W.: *See*—
Stansbury, Benjamin H., Jr.; and Fleming, Thomas W., 274,807, Cl. D12-193.000.

Fossey, Robin E.; and McKenna, Ian P. J., to Container Engineering (Ireland) Limited. Demountable container. 274,802, 7-24-84, Cl. D12-97.000.

Freeman, Bruce A., to Continental Plastics Company. Dispensing container. 274,791, 7-24-84, Cl. D9-352.000.

Freeman, Bruce A., to Continental Plastics Company. Dispensing nozzle for a container. 274,793, 7-24-84, Cl. D9-447.000.

Fuller, Dennis E. Storage and mailing file for rolled prints, documents, and the like. 274,767, 7-24-84, Cl. D3-30.100.

Gem, Incorporated: *See*—
Smith, William H.; and Fields, Ora K., 274,856, Cl. D32-50.000.

Giliotti, Emil, to Coats & Clark, Inc. Trophy base. 274,800, 7-24-84, Cl. D11-164.000.

Glover, Barry: *See*—
Guest, Philip J.; and Glover, Barry, 274,799, Cl. D11-132.000.

Gorton, anny A.: *See*—
Stansbury, Benjamin H., Jr.; and Gorton, anny A., 274,845, Cl. D26-46.000.

Griffin, John; Thompson, James A.; and Beeley, Michael G., to Logan Manufacturing Co. Tracked vehicle for off road use. 274,801, 7-24-84, Cl. D12-7.000.

Gruber, George. Bathtub. 274,835, 7-24-84, Cl. D23-55.000.

GTE Products Corporation: *See*—
de Vos, Hendrik A. J., 274,786, Cl. D8-373.000.

Guest, Philip J.; and Glover, Barry, to Royal Doulton Tableware Ltd. Wall plaque. 274,799, 7-24-84, Cl. D11-132.000.

Hankins, Sharon. Hand held duster. 274,857, 7-24-84, Cl. D32-51.000.

Hughes, Edgar O. Motorcycle engine protector plate. 274,803, 7-24-84, Cl. D12-126.000.

Humble, David R., to Sensormatic Electronics Corporation. Reusable theft deterrent tag housing. 274,796, 7-24-84, Cl. D10-104.000.

Hunt, Waldo H., to Intervisual Communications Inc. Cube book. 274,824, 7-24-84, Cl. D19-28.000.

Immediate Business Systems plc: *See*—
Leach, Anthony; and Wickham, John F., 274,823, Cl. D18-13.000.

Imperial Chemical Industries PLC: *See*—
Shadwell, David W., 274,838, Cl. D24-24.000.

Imperial Mfg. Co.: *See*—
Meyer, Ed, 274,775, Cl. D6-380.000.

International Medical Electronics, Ltd.: *See*—
Berry, Fred M.; and Perlmutter, Leonard L., 274,840, Cl. D24-68.000.

Intervisual Communications Inc.: *See*—
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Isabergs Verkastads AB: *See*—
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Jenkins, Henry H. Die cutter. 274,817, 7-24-84, Cl. D15-128.000.

Jet Sray Corp.: *See*—
LaLumiere, Edward J., 274,779, Cl. D7-311.000.

John D. Brush & Co., Inc.: *See*—
Brush, John D.; and Carpenter, Britt C., 274,858, Cl. D99-28.000.

Joice, Joe: *See*—
Brown, Robert G.; Joice, Joe; and Pardo, John, 274,789, Cl. D9-341.000.

Jones, John C.; and Deschamps, Robert L., to Shure Brothers, Inc. Phonographic cartridge. 274,810, 7-24-84, Cl. D14-28.000.

Jones, John C.; and Deschamps, Robert L., to Shure Brothers, Inc. Phonograph stylus. 274,813, 7-24-84, Cl. D14-29.000.

Kanazawa, Fusao: *See*—
Nishiyama, Masanobu; Kanazawa, Fusao; Tanaka, Hisaji; and Nishimura, Tatsuo, 274,854, Cl. D32-50.000.
Nishiyama, Masanobu; Kanazawa, Fusao; Tanaka, Hisaji; and Nishimura, Tatsuo, 274,855, Cl. D32-50.000.

Kelemen, Jozsef: *See*—
Revah, Isaac R.; Kelemen, Jozsef; and Leung, Earnest C., 274,809, Cl. D13-40.000.

Klier, Hans V., to Olivetti Synthesis, S.p.A. Chair. 274,769, 7-24-84, Cl. D6-366.000.

LaLumiere, Edward J., to Jet Sray Corp. Refrigerated coffee dispenser. 274,779, 7-24-84, Cl. D7-311.000.

Lambert, Reuben S.: *See*—
Molloy, Patrick J.; and Lambert, Reuben S., 274,776, Cl. D7-104.000.

Leach, Anthony; and Wickham, John F., to Immediate Business Systems plc. Portable billing machine. 274,823, 7-24-84, Cl. D18-13.000.

Lefebure Isolants Reunis: *See*—
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Leung, Earnest C.: *See*—
Revah, Isaac R.; Kelemen, Jozsef; and Leung, Earnest C., 274,809, Cl. D13-40.000.

Libby, E. Robert, to Associated Auditory Instruments, Inc. Hearing aid coupler. 274,839, 7-24-84, Cl. D24-35.000.

Lissoni, Adelio, to Sist S.p.A. Societa Internazionale Applicazioni Techniche. Adhesive tape dispenser. 274,825, 7-24-84, Cl. D19-69.000.

Little, Thomas E. Stand for a beverage dispensing container. 274,782, 7-24-84, Cl. D7-397.000.

Logan Manufacturing Co.: *See*—
Griffin, John; Thompson, James A.; and Beeley, Michael G., 274,801, Cl. D12-7.000.

Lord, Henry A.: *See*—
Bixler, Kenneth D.; Lord, Henry A.; and Reifers, Richard F., 274,790, Cl. D9-345.000.

Lynch, Patrick E.; and Wimsatt, James M., to Pyramid Products, Inc. Air purifier. 274,837, 7-24-84, Cl. D23-149.000.

Lynch, Robert J. Golf accessory holder. 274,830, 7-24-84, Cl. D21-234.000.

Macias, Israel A. Safety splash guard shield for metal working machines. 274,818, 7-24-84, Cl. D15-138.000.

Madlener, Evelyn S.: *See*—
O'Hara, Gary J.; and Madlener, Evelyn S., 274,798, Cl. D14-106.000.

Marx & Newman Company: *See*—
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Massonnet, Henry. Arm-chair. 274,770, 7-24-84, Cl. D6-375.000.

Mattel, Inc.: *See—*
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Stansbury, Benjamin H., Jr.; and Gorton, anny A., 274,845, Cl. D26-46.000.
May, Gary A. Chemical dispenser for toilets. 274,834, 7-24-84, Cl. D23-3.000.
McKenna, Ian P. J.: *See—*
Fossey, Robin E.; and McKenna, Ian P. J., 274,802, Cl. D12-97.000.
Meyer, Ed, to Imperial Mfg. Co. Chair frame. 274,775, 7-24-84, Cl. D6-380.000.
Molloy, Patrick J.; and Lambert, Reuben S., to Procter & Gamble Company, The. Scoop. 274,776, 7-24-84, Cl. D7-104.000.
Morrison, Frank E. Still water minnow trap. 274,831, 7-24-84, Cl. D22-18.000.
Nishimura, Tatsuo: *See—*
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Nishiyama, Masanobu; Kanazawa, Fusao; Tanaka, Hisaji; and Nishimura, Tatsuo, 274,855, Cl. D32-50.000.
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Nishiyama, Masanobu; Kanazawa, Fusao; Tanaka, Hisaji; and Nishimura, Tatsuo, to Duskin Franchise Kabushiki Kaisha. Mop. 274,855, 7-24-84, Cl. D32-50.000.
Northern Telecom Limited: *See—*
Revah, Isaac R.; Kelemen, Jozsef; and Leung, Earnest C., 274,809, Cl. D13-40.000.
Obland, Donald R. Collapsible tube winder. 274,772, 7-24-84, Cl. D6-541.000.
O'Hara, Gary J.; and Madleneer, Evelyn S., to Design Dimensions, Ltd. Portable personal information device with calendar-clock. 274,798, 7-24-84, Cl. D14-106.000.
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110 4,461,944
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121 LC 4,461,945
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497 4,461,951

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129 4,461,403
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501 4,461,408

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208 4,461,411
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CLASS 225

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CLASS 226

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CLASS 227

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364 4,461,499

CLASS 290

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CLASS 297

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268 4,461,967
332 4,461,968

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CLASS 313

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313 4,461,992

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453 4,461,546
580 4,461,547

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CLASS 352

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41 4,461,567
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4,461,573
350 4,461,574
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75 4,462,043
89 4,462,044
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212 4,462,047
336 4,462,048

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10.2 4,462,049
32 4,462,050
44 4,462,051
53 4,462,052
78 4,462,053
106 4,462,054
118 4,462,055
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105 4,462,064
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200 4,462,091

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15 4,461,791
35 4,461,792
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	4,461,235		4,461,935		4,461,529		4,461,479		4,461,959		4,462,103
	4,461,248		4,461,945		4,461,640		4,461,537		4,462,016		4,462,106
	4,461,284		4,461,947		4,461,676		4,461,539	23 :	Re.31,633	26 :	4,461,066
	4,461,287		4,461,961		4,461,717		4,461,593		4,461,597		4,461,122
	4,461,295		4,461,965		4,461,773		4,461,601	24 :	4,461,078		4,461,130
	4,461,299		4,461,977		4,461,810		4,461,614		4,461,196		4,461,131
	4,461,300		4,461,993		4,461,858		4,461,649		4,461,203		4,461,188
	4,461,308		4,461,996		4,461,872		4,461,787		4,461,293		4,461,190
	4,461,330		4,461,998		4,461,951		4,461,792		4,461,442		4,461,202
	4,461,361		4,462,006	11 :	4,461,365		4,461,849		4,461,458		4,461,215
	4,461,372		4,462,011	12 :	4,461,081		4,461,857		4,461,546		4,461,216
	4,461,389		4,462,012		4,461,145		4,461,921		4,461,571		4,461,239
	4,461,400		4,462,018		4,461,146		4,461,924		4,461,680		4,461,264
	4,461,407		4,462,023		4,461,266		4,461,930		4,461,927		4,461,277
	4,461,411		4,462,031		4,461,267		4,461,980		4,462,046		4,461,362
	4,461,413		4,462,044		4,461,393		4,462,010	25 :	4,461,099		4,461,376
	4,461,423		4,462,051		4,461,461		4,462,098		4,461,101		4,461,381
	4,461,435		4,462,052		4,461,465		4,462,114		4,461,119		4,461,437
	4,461,440		4,462,054		4,461,468		3,936,257		4,461,126		4,461,446
	4,461,441		4,462,056		4,461,506	18 :	4,461,064		4,461,176		4,461,454
	4,461,443		4,462,064		4,461,514		4,461,120		4,461,178		4,461,473
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	4,461,453		4,462,081		4,461,575		4,461,219		4,461,303		4,461,516
	4,461,456		4,462,082		4,461,609		4,461,269		4,461,304		4,461,594
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DESIGN PATENTS

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PLANT PATENTS

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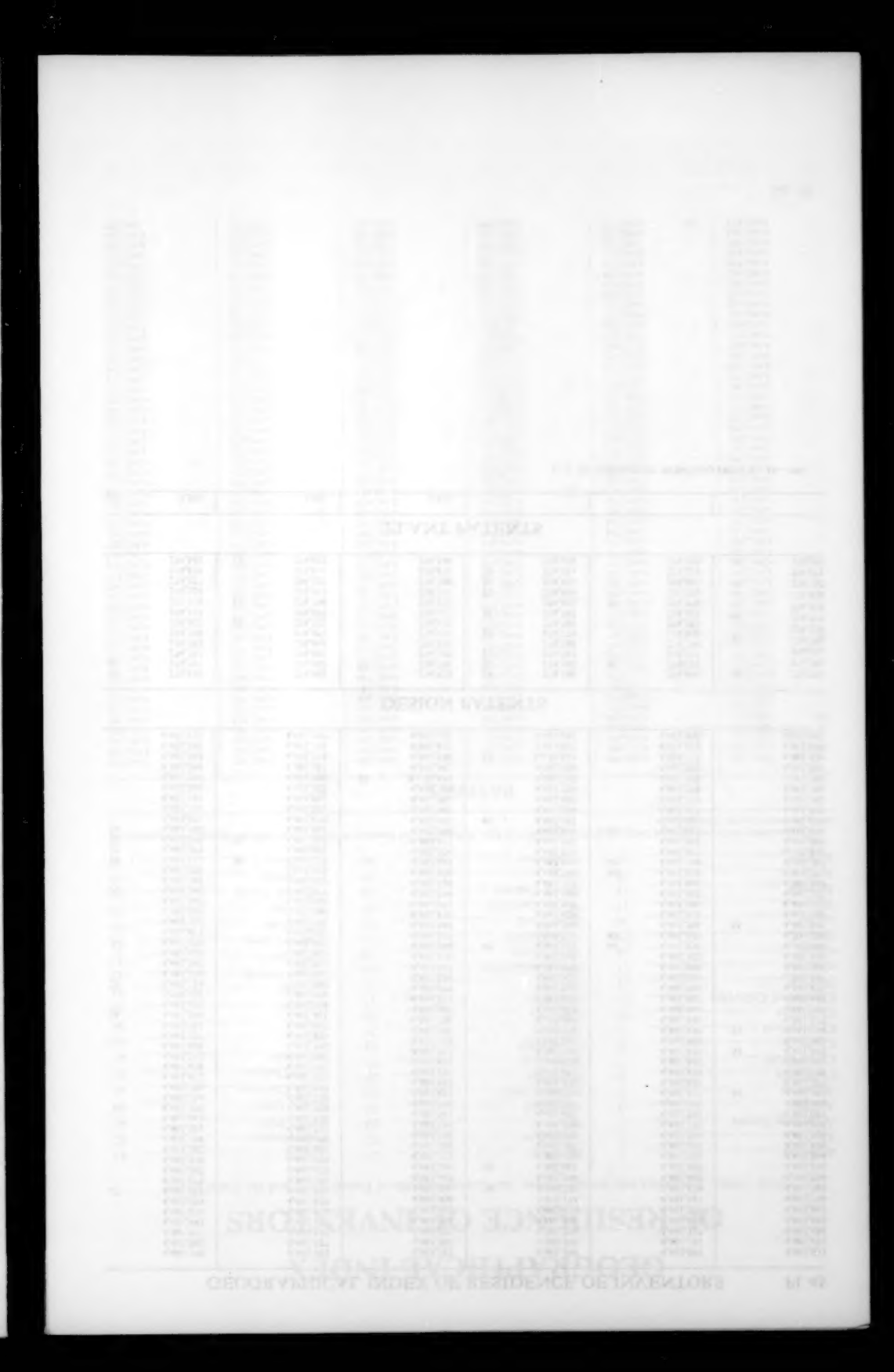

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